

CANAL ACROSS GEORGIA AND FLORIDA.

JANUARY 27, 1921.—Committed to the Committee of the Whole House on the state of the Union and ordered to be printed.

Mr. WHEELER, from the Committee on Railways and Canals, submitted the following

REPORT.

[To accompany H. R. 10919.]

The Committee on Railways and Canals, to whom was referred the bill (H. R. 10919) "to require the Secretary of War to cause to be made a survey for a canal from Cumberland Sound to the mouth of the Mississippi River, and to make full and complete report to Congress of the most feasible route and cost of construction," having considered the same, report thereon, with the recommendation that the bill do pass with the following amendments:

Page 2, line 10, after the word "shall," insert the following: "ascertain the feasibility and practicability of such canal, and."

Page 2, line 17, strike out the figures "100,000" and insert in lieu thereof the figures "50,000."

Page 2, line 18, strike out the word "appropriation" and insert in lieu thereof the word "authorized."

The purpose of this bill is to authorize the Secretary of War to make a survey for a canal beginning in Cumberland Sound and terminating at the mouth of the Mississippi River. Under the provisions of the bill, the Secretary of War would be required to investigate and report to Congress on, first, the cost of constructing a sea-level ship canal of such dimensions as to accommodate the largest seagoing vessels; second, the cost of constructing a lock canal of such dimensions as to accommodate the largest seagoing vessels; third, the cost of constructing a barge canal of such dimensions as to accommodate the largest barges being used for the carriage of freight on any of the waters of the United States. It is proposed to appropriate \$50,000 for the expenses of this survey, but the committee believes that only a fractional portion of this amount will be required.

The many advantages of such a canal are easily apparent. It would be the connecting link in a system of inland waterways extending from Boston Harbor to the mouth of the Mississippi River and

extending the length of that great waterway and its numerous tributaries. It would enable the farmer of the great food-producing States of the Middle West to set his product down at any point on the Atlantic and Gulf coasts he might choose, and at an insignificant cost in comparison with the present rail charges. It would enable the manufacturer in the great industrial districts to get his product to the consumer at greatly reduced transportation rates. It would result in the reduction of rail rates throughout all the vast territory affected. It would enable the southern farmer and fruit grower to get his produce to the great eastern and mid-western markets without being deprived of all his profits by excessive rail transportation charges, as at present. It would tap the great coal fields of West Virginia, western Pennsylvania, and Alabama and distribute this valuable product more cheaply over a territory approximating two-thirds of the United States. The advantages of this canal from the standpoint of the national defense are also numerous. It would enable the Army to rapidly move men and supplies along the coast, and without the risks incident to travel in the open sea. It goes without saying that such a waterway would be an immense strategic advantage in naval warfare.

If this canal were constructed it would be unnecessary for ships to pass through the dangerous straits of Florida in going from the Atlantic to the Gulf of Mexico. Statistics show that in one court in Key West there have been 700 salvage cases tried in one year.

The committee desires to append hereto certain data brought out in the hearing on this bill:

RESULTS OF BUILDING THIS CANAL AND WATERWAY.

(a) Extending the Mississippi River to the Atlantic.

(b) Developing a great import, export, coal and fuel-oil harbor at Cumberland Sound, and providing access to foreign markets for the coal and oil fields of the South and Central West and for the raw products and manufactured goods of the great producing half of the United States.

(c) Giving additional transportation facilities and perpetual lower freight rates to the States bordering on the Mississippi and its tributaries and to the Gulf and South Atlantic States, and relieving one-half of the United States from costly and unnecessary sea and rail hauls, due to the present routing of imports and exports through north Atlantic ports.

(d) Promoting the national defense by providing a short cut, through inland and protected waters, from the Atlantic to the Gulf of Mexico and the Mississippi River.

(e) Placing New Orleans and Mobile 500 miles nearer to Liverpool and New York, and making New Orleans the western terminal of a great volume of transatlantic and coastwise shipping.

(f) Providing return cargoes for the rail lines paralleling the Mississippi River, by delivering at New Orleans a largely increased volume of freight from eastern and foreign points for distribution through the Mississippi Valley, thereby benefiting those roads and the entire transportation system of that section by making it possible for these lines to equalize traffic in both directions, and to reduce the freight cost per ton, through the greater volume of business and through the abolition of the present empty-car movement northward from New Orleans.

(g) Placing Jacksonville, Brunswick, Savannah, and other South Atlantic ports at the Atlantic terminus of the Mississippi River. The Mississippi Valley and Gulf commerce, which will funnel through this new canal and waterway to Cumberland Sound, can be carried thence without transshipment, through existing protected waterways, to these ports, thereby enabling each of them to share in handling the export and import business of one-half of the United States.

(h) Aiding our mercantile marine, by providing a fuel, docking, and repair port on the South Atlantic coast, 500 miles nearer the Panama Canal than is Norfolk. This port will be located at the mouth of a transportation funnel, through which the products of nearly half the country will naturally move to eastern and foreign markets, thereby furnishing return cargoes for the vessels bringing imports to that point, which imports can be easily and cheaply distributed through the same territory. The result will necessarily be an enormous increase in our foreign trade and increased business for our shipping. If American ships are allowed the free use of the canal and waterway, while small tolls are collected from foreign bottoms, this preference will materially aid in developing the American merchant marine.

(i) Opening up great agricultural, mineral, and industrial sections of the country, now largely undeveloped, on whose prosperity the future of the United States must largely depend.

(j) Benefiting the United States as a whole more than any other single project since the construction of the Panama Canal.

QUESTIONS AND ANSWERS ABOUT THE ATLANTIC, GULF & MISSISSIPPI CANAL AND INLAND WATERWAY.

What is the Atlantic, Gulf & Mississippi Canal and inland waterway project? It is a project to build a sea-level ship canal from Cumberland Sound, on the Atlantic seaboard, across Georgia and Florida to St. Georges Sound, on the Gulf of Mexico, just southwest of Tallahassee, Fla.; and from St. Georges Sound to open up the existing natural inland waterway along the northern edge of the Gulf of Mexico westwardly past Mobile Bay and through Lakes Borgne and Ponchartrain to the Mississippi River at New Orleans.

By whom is it proposed that this canal shall be built and this inland waterway opened up? By the United States Government.

What is the length of the proposed canal? Approximately 275 miles; but by the use of existing navigable rivers, streams, and bodies of water probably not more than 150 miles would have to be excavated.

What is the length of the inland waterway along the northern edge of the Gulf of Mexico from St. Georges Sound westwardly to the Mississippi River at New Orleans? Approximately 300 miles.

Has any of this waterway been opened up at this time? Yes. From the Mississippi River, at New Orleans, through lakes Borgne and Ponchartrain, and thence eastwardly to Mobile Bay, a distance of approximately 140 miles, this waterway has been opened up and is now used. From Mobile Bay eastwardly to St. Georges Sound, a distance of approximately 160 miles, some work has been done. This latter portion can be completed at small cost by connecting up various bodies of water lying along the northern edge of the Gulf.

What would be the effect of the construction of such a canal and waterway in a military and naval sense? If a sea-level canal and waterway of sufficient width and depth were constructed the naval vessels of the United States could avoid the long trip around the peninsula of Florida and could move from the Atlantic Ocean to the Gulf of Mexico, or to and up the Mississippi River without going outside and without being exposed to submarine menace or to other dangers. It would furnish a short cut between the Atlantic on the one side and the Gulf and Mississippi River on the other, saving about 500 miles of distance, increasing the efficiency of our Navy, and making possible the quick movement of ships, troops, and supplies through a protected water route between the Mississippi Valley and the Atlantic seaboard at Cumberland Sound.

What is the saving in distance from Cumberland Sound to New Orleans via the proposed canal over the present route around the peninsula of Florida? From New Orleans to New York 497 miles or 994 miles in a round trip; from New Orleans to Liverpool 412 miles or 824 miles in a round trip.

What would be the effect of the proposed canal and waterway upon the economic development of the United States? It would, in effect, bring the mouth of the Mississippi River and of all rivers flowing into the Gulf east of the Mississippi, to the Atlantic seaboard, and it would furnish perpetual and cheap water transportation to the Atlantic seaboard for all the States bordering on the Gulf of Mexico and on the Mississippi and these other rivers and their tributaries.

Would such a result help to build up economically the Southeastern States, the Gulf States, and the Mississippi River States? It would, more than any other single improvement.

How would it do this? By furnishing a permanent avenue of water transportation to the Atlantic seaboard for the products of all of these States. Modern commerce is dependent upon facilities for transportation and freight cost. Water transportation is the cheapest method yet evolved. This waterway, located on the northern edge of the Gulf, would intercept every stream flowing into the Gulf, extending these streams, for the purposes of transportation, from the Atlantic to the Mississippi, and linking them with the greatest system of inland and river transportation in the world. Thousands of miles of rivers would thus become a part of a great trunk line of water transportation and the millions of acres drained by these rivers would have cheap and easy access to all domestic and foreign markets. With this protected waterway and canal the products of the Mississippi River and Gulf States could be loaded on river barges and could be carried without transshipment through the inland waterway and the canal to the Atlantic Ocean at Cumberland Sound, and thence through existing inland waterways to other South Atlantic ports, such as Jacksonville, Brunswick, Savannah, etc.

What is the particular advantage of delivering these products at the Atlantic seaboard? The markets for the products are principally on the Atlantic seaboard and in Europe, and by establishing export markets a demand for our products is established that assures better prices and stabilizes the markets for the same.

Can you, in some striking way, illustrate what is the economic meaning of the extension of the Mississippi River and of other rivers draining into the Gulf to the Atlantic seaboard for the purposes of barge transportation? The Mississippi River and its tributaries drain between one-third and one-half of the United States, affording natural means of water transportation down grade to its mouth for all the territory between the Allegheny and Rocky Mountains. If a topographic map of the United States were laid before you, and you were asked to select a location for a commercial capital for the country, you would immediately be impressed with the value of a location near the mouth of the Mississippi River, because you would see that the products of nearly one-half of the country could be floated to that point by gravity. Your objection to the location would be that it was on the Gulf of Mexico and was not accessible to the markets of the Atlantic seaboard and of Europe. You would be impressed with the idea that if the Mississippi were extended to the Atlantic Ocean a location near its mouth would be ideal for such a commercial capital. The proposed project will extend the Mississippi River to the Atlantic seaboard and will extend all rivers flowing into the Gulf in both an eastwardly and westwardly direction by connecting them with this great intercepting trunk line joining the Mississippi and the Atlantic.

Moreover, the completion of a sea-level canal and waterway capable of floating the largest ships between the Atlantic and the Mississippi at New Orleans will in another way favorably affect the transportation problems now confronting the Mississippi Valley. The rail lines running down the Mississippi can get ample freight down grade to New Orleans, where the products of the valley are collected for export, but they find difficulty in getting freight for the return trip. Having reached the water's edge, they can not find freight for their return trip unless it has been brought to that point by ships in the shape of imports. With the canal and waterway completed, New Orleans will be placed 500 miles nearer the Atlantic and at the western terminus of this great waterway. Ships from Europe and elsewhere will find it to their interest to come through this canal to New Orleans in order to receive outgoing cargoes and will naturally deliver at New Orleans the imports which now deliver so largely through north Atlantic ports. The distribution of these imports through the Mississippi Valley will supply return freight for the rail lines paralleling the river. As a result, when these lines can handle a large volume of freight in both directions instead of in one, as at present, the freight charge on products moving to the Gulf can be reduced, with resultant benefit to the entire section between the Rocky and Allegheny Mountains, and at the same time the railroads will be benefited by the increased volume of business and by overcoming the present empty-car movement northward from New Orleans, which now so adversely affects their earning capacity.

Where is Cumberland Sound? On the Atlantic coast, between the States of Georgia and Florida.

Is it a protected harbor? Absolutely. The mainland of Georgia bounds it on the north and west. The mainland of Florida bounds it on the south and west. On the east it is protected from the ocean by Cumberland Island, extending

for nearly 40 miles north of the entrance, and by Amelia Island, extending 12 miles south of the entrance. Between these two islands lies the entrance from the ocean to Cumberland Sound.

How wide is this entrance between the islands? About $1\frac{1}{2}$ miles.

Is the entrance artificially protected in any way? Yes; it is fully protected. The United States Government some years ago constructed two enormous stone jetties—one from the southern point of Cumberland Island, extending about $3\frac{1}{2}$ miles or more into the ocean; the other from the northern point of Amelia Island, extending about 2 miles out into the ocean. These two stone jetties converge at their outer ends, being there distant from each other about 1,300 yards, or three-fourths of a mile. They form breakwaters and protect the entrance to the harbor.

What was the cost of these jetties? About \$3,650,000.

What is the depth of water over the bar? The Government charts show 24 feet at low water, with a tidal rise of nearly 6 feet, giving 30 feet at high water. As a matter of fact, this depth is being constantly increased by the scour of the water flowing down the St. Marys River into Cumberland Sound and held back by the incoming tide. When the tide falls, this great volume of accumulated water rushes out to sea through the narrow channel between the two converging jetties and gradually deepens the channel.

It is a familiar principle of hydraulics that where a given volume of moving water is forced through a smaller area its velocity and force are increased. Conversely, where the area is enlarged the velocity and force of the water are decreased. In the ordinary fire hose the velocity and force are greatly increased by making the nozzle of much smaller capacity than the hose.

This principle has been applied in the building of the jetties at Cumberland Sound. At the shore end these jetties are about $1\frac{1}{2}$ miles apart. At the sea end they are only three-quarters of a mile apart. As the tide goes out and the volume of accumulated water in Cumberland Sound flows through the constantly narrowing space between the jetties, its velocity and force are increased, so that the channel is scoured out. Conversely, the incoming tide flowing between the narrow entrance between the jetties at their ocean end decreases in velocity and force as the space between the jetties widens toward the shore end, so that the sand is not washed back.

How far is it from Cumberland Sound to the open ocean? About 3 miles, with a straight course.

What is the depth of Cumberland Sound? The greatest depth is about 80 feet. There is abundant water of sufficient depth for the largest ships.

What is the water area at Cumberland Sound? About 33 square miles.

What river flows into Cumberland Sound? The St. Marys River.

In what direction does the St. Marys River extend from Cumberland Sound? Almost due west for nearly 60 miles.

Is the St. Marys River available as a part of the proposed canal? It is, for a distance westwardly from the sound of between 55 and 60 miles. The tide extends up the river beyond this point.

What is the depth of the river for this distance? There are 17 feet of depth at low water for a distance of 12 miles above the sound and 15 feet above this to a point 55 or 60 miles from the sound.

Describe the natural conformation of the land through which the proposed canal would run. For a distance of 55 miles back from Cumberland Sound the land gradually rises to probably 30 feet above tide. Then within a distance of 6 or 8 miles from that point it rises rather steeply to a height of about 112 feet above tide, this being the highest elevation on the proposed line between the Atlantic and the Gulf. At this summit level there exists a large swampy area, composed of a number of fresh-water lakes and swampy land and embracing about 400,000 acres or 625 square miles. This is known as the Okeefenokee Swamp. From the Okeefenokee Swamp westwardly the land drops more gradually to the Gulf of Mexico.

What rivers head in the Okeefenokee Swamp? Two—the St. Marys River, which flows into the Atlantic Ocean at Cumberland Sound, and the Suwannee River which flows southwestwardly into the Gulf of Mexico.

Could not a water connection between the Atlantic Ocean and the Gulf be made by connecting the headwaters of these two rivers? Yes; theoretically this would make the connection; practically a modification of this general plan must be adopted.

Why? For four principal reasons:

(1) On the Atlantic side of the swamp, for the reason that the St. Marys River (which is the boundary line between Georgia and Florida) heads in the southern part of the swamp; then flows southwardly for some distance; then turns in a great curve and flows northwardly back to a point called Camp Pinckney, about 11½ miles from the eastern edge of the swamp, and then flows eastwardly 55 or 60 miles into Cumberland Sound. (See Gillmore's Report, p. 42. and maps.) By cutting across to the swamp from Camp Pinckney a great saving in cost and distance can be effected. Above this point the river becomes small and tortuous and is not navigable. The saving in distance between cutting across to the swamp at this point and following the bends of the upper river would probably be 75 miles, and hence the use of the upper part of the river as a part of the proposed canal is not practicable.

(2) On the Gulf side the Suwannee River heads in the western part of the swamp and flows by a very tortuous course in a general southwesterly direction, emptying into the Gulf of Mexico near its northeastern corner. The Suwannee River is very crooked, and for a great part of its length is shallow. It would cost more to deepen this river so as to make it navigable than it would to cut a straight canal. A portion of it (where it is reasonably straight) may be used for the canal for a distance of between 30 and 50 miles.

(3) In addition, the Suwannee River empties into the northeastern part of the Gulf, where the Gulf is very shallow. If the canal terminated at the mouth of the Suwannee River it would necessitate the building of an artificial harbor on the Gulf, the construction of immense sea walls, and the dredging and maintenance of an expensive channel for several miles out to deep water. The reports of the United States engineers show that you would have to dredge a channel 7½ miles into the open Gulf in order to reach a depth of 26 feet. (Gillmore's report, p. 42.)

(4) But, above all, the Suwannee River empties into the open Gulf, leaving a gap between its mouth and the commencement of the natural inland waterway extending from St. Georges Sound to the Mississippi River at New Orleans. If the canal terminated at any point east of the commencement of this natural inland waterway, then all shipping using the waterway would have to cross the open Gulf for some distance. This would necessitate transshipment of cargoes from barges to ocean-going vessels in order to cross the exposed Gulf portion of the route, with consequent delay and increased cost of transportation. To accomplish its full purpose, the western terminus of the canal must be at St. Georges Sound, where there is an excellent natural harbor, and from which the natural protected inland waterway extends to the Mississippi.

A canal across the Florida Peninsula, simply connecting the Atlantic and the open Gulf, can not be justified from an economic standpoint. It would simply be a short cut for large ocean-going vessels, shortening the route from New Orleans and Mobile to New York and Liverpool, and affording some additional facilities for ocean-going vessels from and to Texas and Mexican ports. But it would not aid materially in developing the Mississippi River and Gulf States. They would have no means of getting their products to the Atlantic seaboard other than they now have. Those products would still have to be loaded at Gulf ports on ocean-going vessels, which would have the advantage of the shortened distance, it is true. But unless the canal and waterway is so located and constructed as to extend the Mississippi and other rivers flowing into the Gulf to the Atlantic it can not utilize or enlarge this great system of inland waterway transportation which nature has provided, and which, when linked together by an intercepting canal, will give the benefits of cheap and continuous water barge transportation and of low freight rates on both outgoing and incoming cargoes to every farm and hamlet accessible to those rivers. A break in the line of this protected waterway will be like removing a rail from a trunk-line railroad. All shipments would have to be transferred to ocean-going vessels in order to pass through the exposed open Gulf. The result would destroy probably 90 per cent of the value of the canal and waterway as a factor in the economic development of the section.

Nor would a canal simply connecting the Atlantic and the Gulf materially benefit the South Atlantic ports. It would simply be a short cut between the ocean and the Gulf. Ocean-going vessels loading at Gulf ports would pass through the canal bound for eastern or foreign points, without stopping at the South Atlantic ports; and, similarly, they would not stop on their incoming trip. Without the continuous system of protected inland waterways serving the entire territory, the South Atlantic ports can not be the Atlantic terminus of this great system of river and canal transportation; nor can they offer facilities for the

distribution of imports through this territory that will enable them to compete with North Atlantic ports and their superior rail facilities. Nor can a South Atlantic bunker coal and fuel oil port be developed unless the continuous system of protected waterways to the Alabama and Mississippi Valley coal and oil fields is completed, so that barges can safely move from the coal mines and oil fields to the seaboard without transshipment.

What is the character of the country through which the canal will run? So far as can be judged from reports already made on the Atlantic side of the swamp, the soil is a sandy loam, with some clay, which can be moved with suction dredges. Through the swamp the soil consists of muck and similar sandy loam and clay, which can probably be likewise moved. On the Gulf side a more sandy soil is encountered, underlaid with rotten limestone. (Gillmore's report, p. 47.) In dredging its system of drainage canals, the State of Florida has done a great deal of excavation in similar rotten limestone, and has found that it can be easily and cheaply handled with modern machinery.

Is this canal project a new one? It is not. The project of a canal across the Florida Peninsula has been discussed ever since the days of George Washington. Interest in the matter culminated in 1876-1880, when a survey of the proposed canal was made by Lieut. Col. Gillmore (afterwards Gen. Gillmore, the Chief of the United States Engineers). This survey, containing an elaborate report on the entire project, with maps and estimates of cost, was reprinted in 1918 as a Senate committee print for the use of the Committee on Commerce of the Sixty-fifth Congress, second session, under the title "Ship Canal Across Florida." You can obtain copy by writing to your Congressman or Senator.

Did this survey cover the route now proposed? It did.

What types of canal are covered in this survey? A lock barge canal, 9 feet deep and 80 feet wide at the bottom; a lock ship canal, 25 feet deep and 80 feet wide at the bottom; and a lock ship canal, 24 feet deep and 240 feet wide at the bottom. (Gillmore's report, pp. 5, 41, and 52.)

How many locks were provided for these canals? For the barge canal, 34 locks, with a length of 180 feet, a lift of 7 feet each, and a bottom width of 45 feet. (Gillmore's report, p. 61.) For the ship canal, 25 feet deep with 80 feet of bottom width, 15 locks, of which 7 (each with a 15-foot lift) were to be on the Atlantic side of the swamp. Eight were to be on the Gulf side, of which 5 were each to have a 15-foot lift and 3 were each to have a 10-foot lift. Each of these locks was to be 500 feet long, 65 feet wide, and 25 feet deep. (Gillmore's report, pp. 41 and 42.) For the ship canal, 24 feet deep with 240 feet of bottom width, 5 locks on the Atlantic side, each with a 21-foot lift, and 6 locks on the Gulf side, each with an 18-foot lift. In addition a guard lock was provided on both the Atlantic and Gulf sides, making 11 lift locks and 2 guard locks. Each lift lock was 350 feet long, 80 feet wide, and 42 feet deep. (Gillmore's report, pp. 52-53.) These lift locks are needed to raise and lower the ships from tide level to and from the summit level of Okefenokee Swamp.

What was the estimate of cost of the proposed canal? It was estimated that the lock barge canal, with a depth of 10 feet, would cost about \$8,250,000 (Gillmore's report, pp. 5, 61, and 62); that the lock ship canal, with a depth of 25 feet and a bottom width of 80 feet, would cost about \$51,000,000 (Gillmore's report, pp. 41 and 49); and that the lock ship canal, with a depth of 24 feet and a bottom width of 240 feet, would cost about \$61,000,000 (Gillmore's report, pp. 52 and 58).

What was the length of the proposed locks? Three hundred and fifty feet to 500 feet, which would be too short for a great many modern vessels. As a result, if a lock ship canal were now contemplated, the size of the locks would have to be enlarged, with a correspondingly increased cost.

Would not the cost of the canal now be much greater than when this report was made? Probably it would. The cost of labor would be much greater. On the other hand, improved dredging machinery, invented since this report was made, would make it possible to handle the material much more economically than was possible 40 years ago.

What type of canal is now advocated? A sea-level canal, with a minimum depth of 35 feet at low water, and possibly with a depth of 41 feet, which is the depth of the Panama Canal.

Would not a sea-level canal cost far more than the largest lock-level canal proposed in Gen. Gillmore's report? Undoubtedly it would. But, for purposes of comparison between a lock-level canal and a sea-level canal, the same depth for each should be considered; and the locks proposed for the lock-level canal should be of size sufficient to accommodate the largest vessels. On this basis

the comparison of cost should be between a sea-level canal, with 35 feet of depth, and a lock-level canal with similar depth and with locks 1,000 feet long, instead of 500 or 350. In addition, in computing the comparative cost of a lock-level canal, it is fair to capitalize at 5 per cent the amount necessary for maintenance and operation of the locks. The original cost of enormous locks, 1,000 feet long, capable of handling the biggest ships, will be very great. Their maintenance and operation will be expensive. With a sea-level canal, instead of building and maintaining the lock structures above ground, it is simply a matter of excavation. After the ditch is dug the waters from the ocean and the Gulf will fill it, and the cost of maintenance will be negligible.

Are there other arguments showing the advantage of a sea-level canal over a lock-level canal? (1) Yes. A lock-level canal must depend for its operation upon the summit-level water supply. That is to say, there must be at the summit level (or at the highest point on the canal) a sufficient volume of water to keep the canal filled and to operate the locks. Starting from the sea, the canal is above tidewater after passing the first lock, and as water flows only downward, the water supply for the canal must come from the highest point, or the summit level. If the summit-level supply is inadequate, then the higher levels of the canal will be dry and it can not be used.

2. In his reports, made in 1876 and 1880, Gen. Gillmore depended upon the waters of the Okefenokee swamp (embracing 625 square miles) and the waters of Bay Swamp, in Florida (just south of Okefenokee Swamp, a little higher in elevation, and embracing 200 square miles) to fill the upper levels of the canal and to operate the locks, and upon water from some of the rivers crossed by the canal for its lower levels. He thought this supply would be sufficient, although he advised further investigation. But if the canal is made 35 feet deep instead of 25 feet, and if the locks are made 1,000 feet long instead of 500, then this water supply may not be adequate and a lock-level canal of this size may be impracticable.

3. Also a lock-level canal is subject to many objections. Every boat going through the canal, whatever its size, would have to pass through 11 to 16 locks and be raised and then lowered over 100 feet. This would mean great loss of time and consequent loss of money, for with shipping loss of time means loss of money. Also, it would mean an enormous expense to maintain and operate the locks. Also, when any one lock got out of repair the continuity of the canal would be broken and its use would be temporarily stopped. Also, the effectiveness of the canal as a military and naval asset would be greatly impaired, for an enemy by destroying one of the lock gates with explosives could temporarily put the canal out of commission. Also, the volume of traffic that can be handled on a lock canal is very much smaller than on a sea-level canal of the same dimensions, and its rapidity of movement is much less, due to the interruption of traffic by the use of the locks.

Do these disadvantages apply to a sea-level canal? They do not. The water supply for the sea-level canal will come from the Atlantic Ocean and the Gulf of Mexico. After the ditch is once dug its cost of maintenance will be negligible. There will be no locks to maintain and no delay to traffic. Consequently, much greater speed can be made through the canal, and a greater volume of traffic can be handled. Gen. Gillmore estimates that 40 hours would be consumed in passing from the Atlantic to the Gulf through a lock-ship canal. (Gillmore's report, p. 32.) Probably the trip could be made through a sea-level canal in one-half this time.

If the Government should dig the canal, can it be done within a reasonable time? No definite answer can be made to this until a final survey of a sea-level canal is made; but the problem is simply one of moving dirt, and the excavations could be carried on by suction dredges from probably 50 points at once if desired, as the canal intercepts a great many streams flowing into the Gulf from which floating suction dredges could work in both directions.

Have the States of Georgia and Florida taken any action about this canal? Yes. The Legislature of the State of Georgia passed an act in reference to the construction of this canal which was approved by the governor on August 19, 1918. Under this act the General Assembly of Georgia indorsed the project, approved the immediate construction of the canal, created a commission headed by the governor of the State (and with the president of the senate and the speaker of the house as members), to urge upon the President and other Federal officials and upon Congress the necessity for its immediate construction; calling the matter to the special attention of the Gulf and Mississippi River

States; requesting the cooperation of the Georgia and other members of the national legislative body in this effort; granting to the United States the right of eminent domain, that it could appropriate all lands in Georgia needed for the prosecution of said work; and ceding to the United States complete sovereignty over the lands so appropriated. The said act further requested that similar action be taken by the State of Florida, which was done at the meeting of the Florida Legislature, held in 1919. Copies of these two acts can be obtained from the secretaries of state of Georgia and Florida, respectively.

Was anything done by the commission appointed under the Georgia act in furtherance of the project? Yes. In September, 1918, the governor of Georgia, in company with the members of the commission and with other prominent men interested in the enterprise, presented the project at Washington to the President of the United States and to a meeting called by the President, at which were represented the Railroad Administration, the Fuel Administration, the Shipping Board, the Navy, and other departments. Also, the project was presented on September 6, 1918, to the Committee on Rivers and Harbors of the House of Representatives, of the Sixty-fifth Congress. Copies of the hearing before this committee, entitled "Hearings on the subject of the construction of a canal from Cumberland Sound, Ga. and Fla., to the Gulf of Mexico," can be obtained from your Congressman or Senator.

Have any bills been introduced in reference to this project, and what is their present status? Several bills have been introduced in the Sixty-sixth Congress, first session, among them one by Congressman Lankford, of Georgia, known as "House bill 6558," introduced on June 24, 1919; and one by Congressman Frank Clark, of Florida, known as "House bill 10919," introduced on December 5, 1919. The Clark bill has been referred to the Committee on Railways and Canals of the House of Representatives, and a hearing has been arranged before that committee on January 29, 1920.

What is the substance of the Clark bill? In substance it asks for an appropriation of \$100,000 to make a survey and report on lock barge and lock ship canals, and on a sea-level canal and waterway from Cumberland Sound on the Atlantic Ocean to a point at or near the mouth of the Mississippi River.

How long would it take to make such a survey? Judging from the statements made in the report of Gen. Gillmore, such a survey, with detailed maps and estimates, could be made within six months, and possibly within four months. (Gillmore's report, p. 107.)

Have any other routes for a canal across Florida been surveyed or reported on by the United States Government? Yes. Four other routes have been surveyed and reported on, in House Document No. 233, Sixty-third Congress, first session, entitled "Intracoastal waterway across Florida section." The routes are designated as the "Okefenokee route" (the route now being considered), the "Santa Fe route," the "Orange Lake route," the "Lake Harris route," and the "Okechobee route" (see p. 7 of said report).

In said report, which of the five routes is described as the most desirable? On page 7 the report says that the Okefenokee route (the route now being advocated) "is the most northerly, and for this reason is regarded as most desirable from a commercial standpoint, but its water supply is precarious and its cost would be great." On pages 9 and 10 the report says: "This being the most northerly route, the special board states that from the standpoint of through commerce from Gulf ports to the Atlantic, it must be considered the most desirable."

On what information is the statement based that the water supply is precarious, and that this is the most costly route? On the Gillmore reports of 1876 and 1880 above referred to.

Does the Gillmore report justify the statement that the water supply for the lock canal is precarious? It does not. On the contrary, at pages 55 and 56 of said report it is stated: "I therefore assume that it has been abundantly proven that there is a sufficient volume of water collectible along the line of the summit level to operate the largest ship canal that the commerce of the country is likely to demand in many years to come." This statement was made in connection with the consideration of the water supply for a lock canal 24 feet deep with a bottom width of 240 feet. Moreover, if a sea-level canal is built, this question of summit level water supply is entirely obviated.

What are the sizes, estimates of cost, and lengths of the five routes considered in House Document 233, Sixty-third Congress, first session, above referred to? "The following dimensions for the canal and for the locks were adopted: Depth of the canal, 10 feet below lowest water; standard bottom width, 100 feet, to be

increased in open waters to a maximum of 200 feet, depending upon the width of the open water; locks, 400 feet usable length and 45 feet width" (p. 9).

1. The Lake Okechobee route was so far south "that it would have few advantages for through traffic between Gulf and Atlantic ports over the existing route around the peninsula, and * * * no survey or estimate along this line was prepared" (p. 9).

2. The Santa Fe route, with termini in the St. Johns River on the Atlantic and the Suwanee River on the Gulf—length, 217 miles—cost, \$17,208,000. Water supply insufficient (p. 10).

3. The Lake Orange route, with termini in the St. Johns River on the Atlantic and the Suwanee River on the Gulf—length, 245 miles—cost, \$16,485,000. Water supply sufficient, but no surplus (p. 10).

4. The Lake Harris route, with the termini at the mouth of the St. Johns River on the Atlantic and Port Inglis, at the mouth of the Withlacoochee River, on the Gulf—length, 237.2 miles—cost, \$16,499,396. Water supply larger than necessary. This is considered by the special board making this report to be the most available route for the canal (p. 10).

5. The Okefenokee route (the one now being advocated). Termini: On the Gulf, at St. Marks; on the Atlantic, at Cumberland Sound (Fernandina); or at the mouth of the St. Johns River.

Length and cost: St. Marks to Fernandina, 215 miles, costing \$41,938,000; St. Marks to the mouth of the St. John River, 251 miles, costing \$44,478,000.

Water supply a serious question, requiring further investigation. "This being the most northerly route, the special board states that from the standpoint of through commerce from Gulf ports to the Atlantic it must be considered the most desirable" (pp. 9-10).

Why is it that the other routes, varying in length from 217 to 245 miles, are estimated to cost around sixteen to seventeen millions, while the Okefenokee route, 215 miles long, is estimated to cost nearly \$42,000,000? Obviously, because the board which made this report of August 9, 1913 (H. Doc. No. 233, 63d Cong., 1st sess.) worked out their own figures for all the routes except the Okefenokee route. On the Okefenokee route they took the figures from the Gillmore report. In taking those figures they were evidently careless and made an absurd mistake. For the Santa Fe route, the Lake Orange route, and the Lake Harris route their estimates were for a lock-barge canal 10 feet deep and 100 feet wide, with locks 400 feet long and 45 feet wide. (See p. 9.) But when they referred to the Gillmore report they evidently took his estimates for a lock-ship canal 25 feet deep, 80 feet wide at the bottom, and with 500-foot locks. (See Gillmore's report, pp. 41, 49.) And for a lock-ship canal 24 feet deep, 240 feet wide at the bottom, and with locks 350 feet long. (See Gillmore's report, pp. 52, 65.)

Did Gen. Gillmore make any estimates of cost of a lock-barge canal 10 feet deep, 100 feet wide, and with locks 400 feet long? No. But he did estimate for a lock-barge canal 8 feet deep, 100 feet wide at the bottom, with 34 locks, each 180 feet long, 45 feet wide, and 8 feet deep, on pages 61 and 62 of his report. The cost of such a lock-barge canal from Cumberland Sound to the mouth of the Ocala River on the Gulf (193 miles) is placed at \$6,514,557.74. (See Gillmore's report, pp. 61-62.) The cost of this lock-barge canal, together with an inland waterway, continued to the Mississippi River by a 9-foot channel, is estimated at \$8,250,000.

So that, according to the reports available, the cost of a lock-barge canal via the Okefenokee route is apparently less than by the other routes suggested in House Document No. 233, Sixty-third Congress, first session? That is true. Apparently for a lock-barge canal the Okefenokee route is the cheapest, as well as the most northerly.

The reason is obvious. By the Okefenokee route the St. Marys River can be used for 61 miles for an 8-foot barge canal without any expenditure. This leaves only 132 miles from Camp Pinckney on the St. Marys to the mouth of the Ocala River on the Gulf, and the Suwanee and the other rivers can be utilized for large parts of this distance.

As to water supply, Gen. Gillmore reports the summit level water supply on the Okefenokee route as being ample for a lock-ship canal 24 feet deep, with a bottom width of 240 feet, and with locks 500 feet long. (Gillmore's report, p. 55.) In view of this statement, it can hardly be questioned that this water supply is ample for a lock-barge canal 10 feet deep and 100 feet wide, whose cross section is less than one-fifth the size of the lock-ship canal considered by Gen. Gillmore, and whose call upon the summit level water supply would be proportionately less.

While it appears that the Board of Engineers, whose report is set out in House Document No. 233, Sixty-third Congress, first session, recommended the Okefenokee route as the most desirable from the standpoint of through commerce from the Gulf to the Atlantic (pp. 9-10); but from a misunderstanding of Gillmore's statements reported the cost as excessive and the water supply insufficient (pp. 9-10), when, in fact, its cost was less and its water supply ample (Gillmore's report, pp. 61, 62, 5, 55-56); and while the Board of Engineers report that, in consequence, the Lake Harris route was the most available route for a lock-barge canal (H. Doc. No. 233, 63d Cong., 1st sess., p. 10), did that Board of Engineers recommend that the lock-barge canal between the Atlantic and the Gulf via the Lake Harris route be constructed? They did not. On the contrary, on page 12, they say:

"From the facts presented it seems clear that the cost of the proposed waterway across the State of Florida would be out of reasonable proportion to the probable benefits under existing conditions, and therefore the board reports that, in its opinion, it is not advisable for the United States to undertake the work at the present time." (P. 12. See also statement of Gen. Bixby, Chief of Engineers, United States Army, on p. 8, pars. 5 and 6.) On page 37, paragraph 26, the report further reads:

"The board is of the opinion that a canal such as is proposed would have no great value as a through route between Gulf and Atlantic ports."

Do the advocates of the sea-level canal, via the Okefenokee route, question the wisdom of these conclusions of the Board of Engineers as to the small value of a 10-foot lock-barge canal across Florida from the mouth of the St. Johns River on the Atlantic to Port Inglis at the mouth of the Withlacoochee River on the Gulf? They do not. A barge canal from the Atlantic to the open Gulf would have small usefulness. Small barges can not risk the dangers of the open Gulf. There would be little shipping which could use such a barge canal, except between local points along the canal. Mississippi River and Mobile River barks could never use such a canal, for they could never get to it. To reach its Gulf terminus they would have to cross the open Gulf from St. George Sound, the eastern terminus of the natural inland waterway from the Mississippi to Port Inglis at the mouth of the Withlacoochee. This they could not do, and the result would be that products from the Mississippi Valley would be loaded on ocean-going vessels at the Gulf ports, and these vessels would be compelled to go around Florida, as a 10-foot deep barge canal would not permit their passage. A barge canal terminating in the open Gulf can never be justified economically, for the dangers and limitations imposed by its open Gulf terminus preclude its use by the barges for which it is designed, if such barges are supposed to be utilized in bringing the products of the Mississippi and Gulf States to the Atlantic seaboard.

Then your contention is that no barge canal connecting the Atlantic and the Gulf of Mexico can be economically justified, unless it is a link in a continuous and uninterrupted line of protected waterways, connecting the Atlantic seaboard and the Mississippi River? That is correct. The barge traffic to justify such a canal must originate somewhere. It can not originate in the open Gulf, for such barges can not safely operate in the open Gulf. The traffic exists on the Mississippi and other rivers flowing into the Gulf. A continuous, protected inland waterway, intercepting all of these rivers, and connecting the Atlantic seaboard with the Mississippi will be a trunk line, affording facilities to traffic which can not use the proposed protected inland route unless it is continuous and uninterrupted.

Is the same true of the sea-level ship canal? Yes. Because the mere creation of a short cut for ocean-going vessels across the peninsula of Florida can not be economically justified by the resultant benefits. The cost would be very great, while the volume of ocean-going shipping that would be served and the benefits accruing to that shipping, would not justify the expenditure. In order to justify such an outlay there must be benefits and advantages over and above those accruing to ocean shipping through a short cut that eliminates 500 miles of steaming.

But if the sea-level ship canal not only provides a short cut for ocean-going vessels, but at the same time connects up the Mississippi and the other rivers flowing into the Gulf with the Atlantic, and opens up and develops as avenues of water transportation thousands of miles of navigable rivers, that are now unused, or but slightly used, because they do not provide means for reaching the markets of the world, then the project is economically justifiable. The benefits to the Mississippi River and Gulf States that will result from an in-

tercepting waterway, connecting all these great rivers with the Atlantic and with each other, and developing these streams as a means of cheap transportation to the eastern seaboard and the markets of the world, for all of the products of the vast territory served by them, will justify the cost of the canal, independently of any consideration of the value of a short cut for ocean-going vessels between the Atlantic and the Gulf. To connect and open up these thousands of miles of waterways and make possible their use for continuous barge transportation to the Atlantic seaboard will doubtless benefit the Mississippi Valley and Gulf States more than would the building, throughout the territory, of 10,000 miles of new railroad trackage—and the benefits will be continuous and constantly increasing. It will open up and make available the greatest system and network of river transportation in the world. It will give to the smallest farmer and to the remotest districts the benefits of low freight rates, of perpetual, easy, and cheap transportation for their products to the great world markets. It will enable them to deliver their products for export at the ship side without rehandling or transshipment.

But this can be accomplished only if the proposed canal and waterway offers a continuous, uninterrupted, and protected route for barge transportation throughout its entire length. If this protected route is not continuous—if the waterway at any point crosses the open Gulf—then its value is largely destroyed. Its continuity is done away with. Continuous barge transportation is interrupted. Transshipment to ocean-going vessels, with its attendant delay and cost of rehandling, becomes necessary, and probably 90 per cent of the economic value of the project disappears.

Would not these advantages result from a lock barge canal? These advantages, in a restricted way, will result from the construction of a barge lock canal and waterway from Cumberland Sound to the Mississippi River. But they will be many times accentuated and increased by the construction of a sea-level ship canal, which can be used both by ocean-going vessels of the largest draft and by river barges as well. With a sea-level ship canal there will be no delays for lockage, no danger of interruption from the breaking of a lock gate, no question of summit-level water supply, practically no limit to the volume and movement of traffic in both directions, and no expensive maintenance of lock structures. Greater speed can be made, with the result that not only will the mouth of the Mississippi be 500 miles nearer Liverpool and New York than it now is via the Straits of Florida, but with a sea-level ship canal it will be 20 hours nearer in time; for while Gen. Gillmore estimates that 40 hours will be consumed in the passage of a lock canal, it seems reasonable to assume that 20 hours will suffice for the passage of a wide and deep sea-level ship canal.

Whatever the type of canal, it must be part of a continuous protected inland waterway from the Atlantic to the Mississippi in order to be economically justified. A sea-level ship canal of this type will be many times more efficient for barge transportation than would a lock barge canal and, in addition, would furnish a short cut for ocean-going vessels, would increase the direct foreign trade of New Orleans and the Gulf ports, would place them 500 miles in distance and 20 hours in time nearer to Europe and New York than would a lock barge canal, and would be of immense value from the standpoint of national defense by providing for our naval vessels a short cut between the Atlantic and the Gulf and Mississippi River through a protected route, free from the dangers of submarines and mines.

Could not a sea-level ship canal be built across the Florida Peninsula, starting at Jacksonville on the St. Johns River, at much less cost than by the proposed route across Okefenokee Swamp? Yes.

Explain why this canal would not serve the same purpose as the one proposed. For several reasons:

(1) On the Gulf side the canal would terminate in the northeastern edge of the Gulf, where it is very shallow and where an artificial harbor would have to be built and a channel dredged out for several miles to deep water in the Gulf, with costly retaining walls to keep the channel open.

(2) In addition the Gulf terminus of this canal would probably be 100 miles distant from the beginning of the natural inland waterway starting at St. Georges Sound and extending to the Mississippi River. This alone condemns the route, because there would be a break in the protected waterway requiring transshipment of cargo to seagoing boats in order to cross the open Gulf and destroying the value of the canal for barge transportation from the Mississippi and other rivers flowing into the Gulf. This would absolutely prevent the barge

movement of coal from the Alabama and Illinois fields, defeating the object of developing a coal port on the South Atlantic.

(3) On the Atlantic side Jacksonville is located on the St. Johns River 25 miles from the Atlantic Ocean, by a tortuous channel. Cumberland Sound is only 3 miles from the ocean by a straight channel. The St. Johns River is constantly filling up, and a large annual appropriation is required to maintain the present depth to the sea. On the other hand, the entrance to Cumberland Sound is constantly scouring out to a greater depth.

(4) The cost of towage and pilotage up the 25 miles of the St. Johns River would impose a heavy burden on every ingoing and outgoing ship, in addition to the time required for going in and going out, which would probably consume the better part of a day. At Cumberland Sound there should be no pilotage or towage charges, and a vessel could come from the open sea to the dock, a distance of 3 to 5 miles by a straight course, in about 30 minutes.

The wonderful advantages of Cumberland Sound as a terminal for the canal and as a coaling and repair port, on account of its accessibility, its nearness to the sea, its straight channel, and its wide expanse of navigable water, has been strikingly illustrated on two occasions in recent years.

St. Marys, Ga., is located on the mainland of Georgia on the north side of St. Marys River 5 miles above the point where that river flows into Cumberland Sound. In the year 1918 a steam vessel 423 feet long came into Cumberland Sound, up the St. Marys River, tied up at the dock, loaded, turned around, and went to sea again, all without a pilot. In what other harbor on the coast could this be done?

Fernandina, Fla., is located on Amelia Island, on the east side of the Amelia River, a tidal estuary, which is really a part of Cumberland Sound and about 2 miles south of the entrance to the sound. In the year 1919 two sailing vessels, each of about 5,000 tons, at different times sailed into the sound, up the Amelia River, tied up at the Fernandina docks, loaded, and then sailed out to sea again without requiring the services of a tug—and without towage charges. In what other Atlantic port could this be done?

(5) The water area of Cumberland Sound is far in excess of that of the St. Johns River at Jacksonville, and Cumberland Sound affords a much more desirable terminal.

How far is Cumberland Sound north of Jacksonville? About 24 miles by air line and about 48 miles by water. The two places are connected by an existing inland and protected waterway.

How far is Cumberland Sound south of Brunswick, Ga.? About 30 miles by air line and about 42 miles by water. The two places are connected by an existing inland and protected waterway.

How far is Cumberland Sound south of Savannah, Ga.? Approximately 90 miles by air line and about 122 by water. The two places are connected by an existing inland and protected waterway.

Can it be shown that it is to the interest of Jacksonville to have this canal constructed from Cumberland Sound to St. George Sound, and thence by inland waterway to the Mississippi River, rather than to have a canal cut directly across the Peninsula of Florida from Jacksonville, on the St. Johns River, to Port Inglis, at the mouth of the Withlacoochee River on the Gulf? It can, for several reasons:

(1) As has been shown above, a barge canal or a sea-level canal from the St. Johns River to Port Inglis (or to any other point on the northeastern edge of the Gulf of Mexico) would end in the open Gulf and would leave a gap between the Gulf terminus of the canal and the natural inland waterway extending from St. Johns Sound to the Mississippi. This would mean that there would be a break in the protected inland waterway, and that barge transportation from the Mississippi, the Mobile, and other rivers flowing into the Gulf would be terminated on St. George Sound on the east. The result would be that no matter what the type of canal, whether a sea-level ship canal or a barge-lock canal, Jacksonville could not get any of the barge traffic from the Mississippi and other rivers flowing into the Gulf, because all traffic brought on barges to St. George Sound would have to be there transhipped to ocean-going vessels. The break in the continuity of the protected inland waterway would destroy this potential barge traffic and would mean that this barge transportation would, as at present, terminate at Gulf ports, where the cargoes would be placed on ocean-going ships. These ships, even if they pass through a sea-level ship canal connecting the St. Johns River directly with the Gulf, would not stop at Jacksonville, but would continue to their ultimate foreign or eastern destination. They would pass Jacksonville without stopping and Jacksonville would get no benefit.

In other words, the building even of a sea-level ship canal from the St. Johns River to the Gulf would not extend the Mississippi to the Atlantic, and would not make possible the barge traffic from the Gulf and Mississippi River States to the South Atlantic ports, which is the great object in view.

One result of this would be that coal barges from the Alabama coal fields coming down the Black Warrior, the Tombigbee, and Mobile Rivers could not continue to the Atlantic seaboard without transshipment; similarly with coal barges from the Illinois coal fields down the Mississippi; similarly with oil barges from the oil fields of the Central West. These barges could not move without transshipment, if they had to cross the open Gulf, with the result that neither Jacksonville nor any other South Atlantic port could be developed as a coal and fuel-oil port.

(2) On the other hand, Jacksonville is connected by an existing waterway with Cumberland Sound. If a sea-level ship canal were constructed from Cumberland Sound across Georgia to St. George Sound, there connecting with the protected inland waterway (extending along the northern edge of the Gulf to the Mississippi River) all the products of the Mississippi and Gulf States could be moved by barge transportation through a continuous protected inland waterway to Cumberland Sound, and then any part of such traffic destined for Jacksonville could move in the same barges through the existing inland waterway 48 miles farther to Jacksonville, making Jacksonville a coal and fuel-oil port, with coal selling probably more cheaply than it now sells at Norfolk, and giving Jacksonville a fair share of the great volume of business from the Mississippi River and Gulf States.

(3) The value to Jacksonville of a canal from the St. Johns River to the open Gulf would be very small as compared to the value to Jacksonville of a canal from Cumberland Sound to St. George Sound, affording means of barge transportation to the seaboard for the products of the Gulf and Mississippi River States. The St. Johns-to-the-Gulf canal would produce no material volume of new business, and would have so little value that the Board of Engineers who reported on it, stated that its cost would be out of proportion to the probable benefits. But the Cumberland Sound to St. George Sound sea-level ship canal would bring to and through Cumberland Sound, and proportionately to Jacksonville, the enormous traffic of the Mississippi and Gulf States; would give Jacksonville cheap coal and oil; would make Jacksonville one of the Atlantic termini of the Mississippi River; and would greatly increase its shipping and foreign trade, by furnishing return cargoes for loaded vessels arriving at Jacksonville.

(4) In addition, it should be recognized that a canal from the St. Johns River to the Gulf accomplished nothing except to create a short cut, produces very little economic benefit to the balance of the country, and its expense is not justified by the results to be achieved. Under these circumstances, it is obvious that the Representatives in Congress from the various States will not authorize the expenditure necessary to construct this canal.

But the canal extending the Mississippi River to the Atlantic Ocean will affect the economic development of one-half the United States. It will be a national asset, and will be of national benefit. It will materially improve and increase our foreign trade. It will enhance the value of lands, industries, and products of all the Gulf and Mississippi River States. It will command national interest and commend itself to the national legislators. The expense of constructing such a canal can be justified on national grounds. It is hopeless for Jacksonville to attempt to secure the canal across Florida connecting the St. Johns River and the open Gulf, and the benefits therefrom will be negligible. It is reasonable to believe that the Cumberland Sound to the Mississippi Canal and waterway will commend itself to the national legislators as an economic proposition for the good of the whole country, and the resultant benefits to Jacksonville will be many times greater than could come from the other project.

(5) It is confident to believe that if Jacksonville, by its mere say so, could have constructed the canal connecting the St. Johns River with the open Gulf, and if it had to expend five millions to get the Cumberland Sound to the Mississippi canal constructed, it would be to its interest to spend the five millions on account of the greater resultant benefits. The fact that the proposed canal goes through Cumberland Sound on its way to Jacksonville is an incident, just as is the fact that it goes through St. Georges Sound. Under no circumstances will Jacksonville get all the Mississippi Valley and Gulf States business. With the Cumberland Sound to the Mississippi canal and waterway, Jacksonville will receive its fair share of that business; with the St. Johns River to the open Gulf canal, Jacksonville will receive none of such business.

Why could not Brunswick, Ga., be used as the terminus of the canal? The distance is too great and the cost of the canal would be prohibitive. From Cumberland Sound the canal would utilize the St. Marys River for nearly 60 miles west. No such natural part of the canal exists at Brunswick. Moreover, Brunswick is 15 miles from the ocean, whereas Cumberland Sound is only 3 miles distant.

How about Savannah as the Atlantic terminus of the canal? To use Savannah would add nearly 100 miles to the length of the canal, without having any natural rivers which could be utilized, as the St. Marys can be. As against Cumberland Sound and the existing St. Marys River, a canal to Savannah from St. Georges Sound would probably require 125 to 150 miles more of excavation.

Moreover, Savannah is 25 miles up the Savannah River from the ocean and requires a large annual appropriation to maintain its present depth between Savannah and the sea. The towage and pilotage charges and loss of time to Savannah would be as great as those at Jacksonville.

Why is a good harbor so essential as the terminus of the proposed canal? This can best be illustrated by comparing it to a railroad proposition. A distinguished railroad engineer was once asked what would be the cost of a double-track railroad between New York and Chicago, a distance of approximately 1,000 miles, and was asked to give his opinion offhand. He stated that he could not give even an approximate estimate of cost without knowing in detail the character of the country, the physical difficulties, the character of construction, the character of equipment, etc. But he stated that he could give one conservative element of cost, and that was "that such a railroad, in order to be able to handle the traffic necessary for its maintenance, would require terminals in New York City which would cost at least \$100,000,000, or \$100,000 per mile for each of the 1,000 miles of track." He further stated that it would be folly to consider building such a road without providing adequate terminals. No railroad can be handled economically unless it has adequate terminal facilities, because facilities for the initiation of shipments and for the delivery of consignments must be provided at the terminus and must be adequate for the volume of traffic which the road proposes to handle. The terminus on the Atlantic seaboard must offer facilities adequate for the receipt and handling of the enormous volume of products coming from the Gulf and Mississippi River States and destined for eastern and European markets. Similarly, it must have facilities for receiving and distributing throughout this territory the imports delivered at this terminal by incoming ships.

Is there available at Cumberland Sound water and wharf frontage adequate for such a volume of traffic? Yes. At and around Cumberland Sound and on the St. Marys River there is probably available between 75 and 100 miles of deep-water frontage, which can be developed into excellent wharfage at small cost.

Can any great port, such as that proposed at Cumberland Sound, be developed on the South Atlantic coast unless it is accessible to supplies of coal and oil for bunker and fuel purposes? No.

What are the great bunker-coal ports on the Atlantic seaboard? Norfolk, Newport News, and Baltimore, all of which are on the Chesapeake Bay, and access to which can be obtained only by entering between Capes Henry and Charles at the mouth of the bay.

What are the great soft-coal carrying roads in the eastern part of the United States? The Baltimore & Ohio, delivering West Virginia coal at Baltimore; the Chesapeake & Ohio, delivering West Virginia coal at Newport News; and the Norfolk & Western and Virginian, delivering Virginia, Kentucky, and Tennessee coal at Norfolk. This makes the Chesapeake Bay the great bunker-coal port on the Atlantic seaboard and the greatest bunker-coal port in America. Bunker coal can be delivered at Chesapeake Bay points (which will hereafter be collectively referred to as Hampton Roads) cheaper than it can be delivered at shipside anywhere else in the country.

The Virginian road (built in recent years by H. H. Rogers, one of the high officials of the Standard Oil Co., and built largely for cash) has nearly seventy millions of stocks and bonds outstanding. This road is magnificently constructed and hauls coal at the lowest cost per ton-mile of any road in America. It is 505 miles long, extending from the coal fields of Virginia and Kentucky to the coal pier at Norfolk. For purposes of comparison of the cost of delivering bunker coal at the shipside, the cost via the Virginian, at Norfolk, can be fairly used.

Why is bunker coal so essential to the development of a great port? Ships coming into a port must be able to obtain fuel in order to continue their voyage, and this fuel must be available at a low price, or else the ships can not afford to stop at that port. Moreover, coal is one of the great raw products making up our volume of exports and on which our international trade balance largely depends. It is essential to all industries, to all shipping, and to all countries. The supplies of coal in the United States exceed that of all European countries combined. Cuba has no coal. South America has very little coal. Most of the coal for eastern South America comes from England, and most of the coal for western South America comes from Australia. England has largely built up its volume of foreign trade on its coal exports, but recently the English authorities have stated that the export of English coal must be greatly curtailed so as to meet domestic requirements, and so as not to exhaust its available supply. Germany built up its foreign trade on its coal exports. As a result of the World War Germany has been deprived for a term of years of the great coal deposits in the Saar Valley, which have been turned over to France to offset the destruction of the French coal mines by Germany. France can not supply its own demands. Consequently the demands of Italy, of various European countries, of Cuba, South America, and of numerous countries which have depended on England and Germany for their coal supplies, must be supplied by the United States. In order to do this it is extremely desirable that another bunker-coal port be opened up on the South Atlantic. To do this it proposed to develop a great coal port at Cumberland Sound and at other South Atlantic ports connected with Cumberland Sound by existing inland waterways. The coal delivered at Cumberland Sound will be from fields heretofore not accessible to Atlantic seaports, which fields have not had the benefit of an export market for their products.

Is Cumberland Sound accessible to supplies of coal and fuel oil? Yes.

From what point would it obtain coal, and how? The coal deposits of Alabama, in the Birmingham district, are largely located on the Black Warrior River. The Black Warrior flows into the Tombigbee, which, in turn, flows into the Mobile River, emptying into Mobile Bay on the line of the proposed waterway. These rivers have been canalized and Alabama coal is now brought down from the coal fields along these rivers, a distance of about 450 miles, in barges to Mobile Bay. At Mobile Bay these barges now turn westwardly and go to New Orleans and the Mississippi River via that portion of the inland waterway which is already completed. Similarly, when the waterway is completed eastwardly from Mobile Bay to St. Georges Sound, like barges can come down from the Black Warrior River district to Mobile Bay, a distance of 450 miles, and then turn eastwardly through the waterway to St. Georges Sound, and thence through the proposed canal to Cumberland Sound, a distance of about 400 additional miles, without transshipment of cargo. The total barge water haul would be less than 900 miles. Pocahontas coal delivered at Norfolk and Newport News has to be hauled between 400 and 500 miles by rail from the Virginia, West Virginia, Kentucky, and Tennessee fields. Judging from the present cost of hauling coal in barges down the Black Warrior to Mobile Bay, it is confidently believed that these barges can deliver coal at Cumberland Sound at less freight cost than is now borne by the Pocahontas and New River coal delivered at Norfolk and Newport News.

Similarly, bunker coal from the Illinois coal fields can be barged down the Mississippi River to New Orleans through the inland waterway and proposed canal to Cumberland Sound and delivered at the Atlantic seaboard probably more cheaply than Pocahontas coal is delivered at Norfolk.

There are found in Illinois several magnificent seams of bunker coal, among them a 9-foot vein of as good coal as can be found in the country. This coal is accessible to the Mississippi River and its tributaries and can be easily barged down. At present this coal is not available for export. If it attempts to move to the Atlantic seaboard it has to cross the eastern coal fields of Ohio, Pennsylvania, West Virginia, Virginia, Kentucky, and Tennessee. Being nearer to the Atlantic and having a short haul, these eastern coal fields pay a lower freight rate to the seaboard, and hence the Illinois coal can not compete at the Atlantic seaboard.

Just west of Illinois coal fields lie the coal fields of Iowa, Missouri, Kansas, and Oklahoma. Still farther west and nearer the Pacific coast are the coal fields of Wyoming, Utah, and Colorado. These being nearer the Pacific coast have an advantage in rates over the Illinois fields, which can not compete for

export at specific points because they have to go across these other and nearer coal fields.

Northeast of Illinois coal fields lie the Michigan coal fields, and at the great coal-consuming points in the Middle West, such as Chicago, Pittsburgh, etc., Illinois coal has to compete with coal from the eastern fields and with Michigan coal, which is just as accessible to those points.

As a result there is no export market for Illinois coal, to its great detriment. The only direction in which it can advantageously move is down the Mississippi River, but at New Orleans there is a restricted export market. Illinois coal would be greatly benefited if it could obtain an Atlantic outlet and command an export market, for it is universally recognized that an export market fixes the price and absorbs the surplus. As, for instance, the price of cotton for many years has been fixed in Liverpool.

In western Kentucky there is a grade of coal which could be used for domestic purposes, releasing the Illinois bunker coal for export.

By barging this Illinois coal to Cumberland Sound via the Mississippi River, the inland waterway, and the proposed canal, not only would great bunker-coal ports be established at Cumberland Sound, at Jacksonville, at Brunswick, and at Savannah, but an export market would be provided for this coal from the Central West, which is not now available for shipment abroad, with resultant benefit to this great industry in Illinois, and with resultant national benefit through the increased exportation of coal from fields not now available for export, and the resultant increase in our international trade balance.

Would the same general statement apply to fuel oil? Yes. The fuel-oil fields of Oklahoma, of Texas, and of the Central Western States would be made accessible to a south Atlantic port, and would furnish a new and desirable export market for their products. Similarly, the fuel oils from the Tampico fields in Mexico would find their nearest Atlantic port at Cumberland Sound.

Would this apply to refined oils and gasoline? Obviously it would. The same facilities for export and for reaching the foreign and eastern markets which apply to fuel oils would likewise apply to refined oils and gasoline. When it is appreciated that a great many modern ships are being constructed as oil burners instead of coal burners, as heretofore, that the leading eastern railroads are installing oil-burning locomotives, and that the markets for refined oils and gasoline in the East and Europe are almost unlimited, the advantage of a south Atlantic port where fuel, refined oils, and gasoline can be cheaply delivered and exported is apparent. The effect of the opening of such a port upon the development of the coal and oil fields of the Central West can hardly be overestimated. It is confidently believed that the benefits from the building of this canal and waterway to the coal and oil industries alone would more than justify the expense, and that the development of coal and oil ports at Cumberland Sound, Jacksonville, Brunswick, and Savannah is of itself a sufficient reason for the immediate construction of the canal.

Would there be an export demand for coal at Cumberland Sound, Jacksonville, Brunswick, and Savannah? It is hardly necessary to state that there would be. With the existing demand in Europe, with the demand in eastern South America (which has heretofore been supplied by England), and with the whole world crying for coal, it can hardly be questioned that all the coal that could be shipped to Cumberland Sound and its vicinity would command a ready export market. Cumberland Sound would be the nearest Atlantic port to Cuba and to the Panama Canal. Cuba produces no coal. All coal used at the Panama Canal must be carried there in ships, either from Chesapeake Bay or from points farther north. Coal for Cuba and for the Panama Canal and for Europe could be economically exported from Cumberland Sound.

Would there be any return cargoes for seagoing barges hauling coal to Cuba? Yes. Cuba has great deposits of iron ore and manganese. This iron ore and manganese could be brought as return cargoes to Cumberland Sound, meeting there the coal and coke from Alabama and the limestone from Florida, through which the canal will pass for 50 miles. This would make possible the development of a great steel industry and great steel-ship building industry at Cumberland Sound.

Would vessels from Europe and the British Isles, destined for the Panama Canal, and wishing to coal on this side, use Cumberland Sound as a coaling port? Yes. The Gulf Stream, which passes within about 50 miles east of Cumberland Sound, runs up to the British Isles. A straight course could be laid from a port in the British Isles or in Europe to Cumberland Sound, and

from Cumberland Sound a straight course could be laid to the Straits of Florida, through which access can be had to the Panama Canal.

If such a vessel now wants to coal on this side, where must it go? To Norfolk or Newport News to get cheap coal. This means that it must come across the ocean, pass between Capes Henry and Charles, and go 22 miles inside to the coal pier. Then, it must return between the Capes and go over 100 miles eastwardly out to sea so as to avoid the dangers of Cape Hatteras, which projects far out into the ocean below the Chesapeake Bay. Then it must come westwardly over 300 miles to get to the Straits of Florida. This means several hundred miles of useless steaming, in order to coal at Chesapeake Bay rather than at Cumberland Sound.

Would the development of Cumberland Sound help the ports of Jacksonville, Brunswick, Savannah, Port Royal, Charleston, and Wilmington? Yes.

How? All of these points are connected with Cumberland Sound by existing inland waterways, which can be opened up to the desired depth at small cost. The extension of the Mississippi and of the other rivers flowing into the Gulf to the Atlantic would bring through the canal an enormous volume of traffic, which would be distributed to these various ports. This traffic, so far as it is developed, is now loaded on ocean-going vessels at New Orleans or the Gulf ports, or else seeks the route via the Great Lakes, the Erie Canal, and the Hudson River to New Orleans, or follows the rail routes to north Atlantic ports. With the opening up of a new and cheap avenue of water transportation to the south Atlantic seaboard the volume of this traffic will enormously increase, and it will enjoy lower freight rates to the coast.

Would the building of this canal help the railroads in the Southeast and Central sections of the United States? Yes. The history of water transportation in this country shows that when additional water transportation facilities are afforded the development of the section is so rapid that the railroads receive more business than they can handle. The heavier products seek the cheaper water routes, and the lighter products, which can pay a higher freight rate, seek the railroads. This is especially noticeable about the section served by the Erie Canal.

Would the building of this canal and waterway help the rail lines paralleling the Mississippi River? Yes. These lines now have their great volume of freight down grade to the Gulf at New Orleans. The enormous volume of Mississippi Valley products, seeking a Gulf outlet, furnishes them with a heavy burden of traffic southward; but return freight is scarce, and many of their cars are empty on the trip north. The reason is obvious. Terminating at the Gulf they can get no return traffic unless it is brought in from the Gulf in the shape of imports. Everything which increases the shipping and import business at New Orleans must build up this volume of return freight for the railroads. For the imports delivered at New Orleans will be largely distributed through the Mississippi Valley by rail. With commodities moving northward, and thus abolishing the empty-car movement in that direction, the earnings of the roads will be increased, and the freight tax on southbound freight can be reduced when a fair part of the burden is borne by northbound traffic.

With New Orleans as the western terminal of this great sea-level ship canal, through which transatlantic vessels will come to her docks, the volume of her import and export trade will increase—and with the increase of her imports will result in an increased northward freight movement over the rails along the Mississippi River, with resultant benefit to the entire transportation system of the valley.

Do not the Chicago Drainage Canal, the Great Lakes, the Erie Canal, and the Hudson River now afford an all-water route from the Mississippi Valley to the Atlantic seaboard? Yes; but that route is closed up for five months during the year by ice. In the proposed Atlantic-to-the-Gulf canal and waterway ice is unknown. Moreover, Mississippi River traffic would have to go upstream to take advantage of the northern water route, but would go downstream to take advantage of the southern route.

Moreover, it should be remembered that the Erie Canal route is closed by ice for five months during the year, and that during the months when it is closed the rail rates from Middle Western points to the Atlantic seaboard are advanced.

Could barges from the Mississippi River, coming through the inland waterway and the proposed canal to Cumberland Sound be carried thence without transshipment of cargo to the various ports on the Atlantic seaboard south and north of Cumberland Sound? Yes; they could now be carried through existing inland waterways south to Jacksonville or north to Savannah, and for some dis-

tance beyond Savannah toward Charleston. The inland waterway project, to which the National Government is committed, involves the development of an inland waterway along the coast from Boston to the Rio Grande. This waterway is now in operation from New York southwardly through existing canals to the Delaware Bay; thence through existing canals to the Chesapeake Bay; thence through existing canals to Albemarle and Pamlico Sounds; and thence to a point some 25 or 30 miles below Beaufort, N. C. When this inland waterway is completed between Beaufort and Savannah (and a great part of it already exists in the shape of natural waterways), then the Mississippi River barges, after reaching Cumberland Sound, could continue through protected inland waterways as far north as New York, and from New York could go via the Hudson River, the Erie Canal, the Great Lakes, and the Chicago Drainage Canal back to the Mississippi.

What are the climatic conditions at Cumberland Sound? They are excellent, as shown by the Government reports. The average annual rainfall at St. Marys for 21 years is 52.57 inches. The annual average temperature for 19 years is 67.4. On all sides of Cumberland Sound excellent artesian water is obtained in flowing wells, upon sinking to a depth of between 350 to 500 feet. Gen. Gilmore, at pages 59-60 of his report, says in regard to Climate and Healthy Character of the Country:

"There are no difficulties to be encountered of a climatic character in excavating a canal anywhere along the line of our surveys at any season of the year. Our parties were remarkably free from any injurious effects due to climate. Though in the swamp in midsummer, not an instance of sickness was recorded. The Okefenokee and contiguous swamps are among the most healthy portions of the country—far less sickness arising from climatic causes than is to be found in the vicinity of the lowlands of Georgia and the Carolinas. * * * There would be, I am sure, no difficulties on account of a malarious climate in constructing a canal in all its parts during any season of the year."

What is the agricultural possibility of the section adjacent to Cumberland Sound? This is the long staple or Sea Island cotton district. The soil is the Norfolk sandy loam, with a clay subsoil. Three crops can be produced in a year. The land is agriculturally among the best land in the country, and outdoor work can be done during the whole year, as ice very rarely occurs.

In this immediate section sugar cane, vegetables, trucks, fruits, and nuts grow to perfection. In addition, in recent years, the raising of hogs and cattle has greatly increased. Cattle can range during the whole year on account of the mild climate, and as vegetation is growing practically throughout the year they can readily find sustenance without being fed. People who have made a study of the subject confidently predict that the great cattle industry of this country will shortly move to this southeastern section; and the same is true of the raising of hogs.

What are the railroad facilities of this section? They are excellent. The main arteries of railroad transportation pass very close to Cumberland Sound. The railroads which center at Jacksonville and at Brunswick and Savannah are within short distance of the sound and are easily accessible. Among these roads might be mentioned the Atlantic Coast Line Railway, the Seaboard Air Line Railway, the Southern Railway, and the Atlanta, Birmingham & Atlantic Railway.

Are there any cities or towns at Cumberland Sound or in its vicinity? Yes. On the south, or Florida side, the city of Fernandina, with about 5,000 population, is located on Amelia Island and has rail connection at Yulee with the Seaboard Air Line Railway, and at Callahan with the Atlantic Coast Line Railway. On the northern side of the St. Marys River, just above the sound and within sight of it, and on the Georgia mainland, lies the town of St. Marys, with a population of about 1,000, connected by an existing railroad with the Seaboard Air Line Railway at Kingsland, and owning the right of way completely graded for a connection with the Atlantic Coast Line and Southern at Folkston, Ga.

Is the development of a South Atlantic port as far south as Cumberland Sound essential to the development of the South Atlantic, the Gulf, and the Mississippi River States? It is; and it can be demonstrated. As an illustration, attention is called to the following:

Cape Hatteras is located about midway between Portland, Me., and Miami, Fla. There is about 700 miles of coast line north of Cape Hatteras and about the same south of Cape Hatteras. North of Cape Hatteras are the ports of Chesapeake Bay, Philadelphia, New York, Boston, and Portland. South of Cape

Hatteras are the ports of Wilmington, Charleston, Port Royal, Savannah, Brunswick, Cumberland Sound, Jacksonville, and Miami.

As an illustration of the use of these ports, attention is called to the customs duties collected by the United States Government in the year 1914, which was the last year before war conditions came into effect.

In the year 1914, the entire customs duties collected by the United States Government amounted, in round figures, to \$292,000,000. Of this amount, \$245,000,000 were collected at Atlantic ports north of Cape Hatteras, and \$315,000 were collected at Atlantic ports south of Cape Hatteras. Two hundred and two million dollars were collected at New York, the largest port north of Cape Hatteras, and \$150,000 were collected at Savannah, the largest port south of Cape Hatteras. Fifteen million dollars were collected at the Gulf ports, and of this, \$11,000,000 were collected at New Orleans—the balance was collected at Pacific ports.

When the imports of the United States paid \$245,000,000 north of Cape Hatteras and only \$315,000 south of Cape Hatteras, it is evident that the South Atlantic ports are not used, and that all that portion of the imports which finally go to and is consumed in the southeast and central south is subjected to an unnecessary rail freight charge because of its being delivered at northern ports instead of at accessible southern ports. The South and the Mississippi Valley can not be properly developed until their Atlantic gateways are opened, and until they are relieved of the unnecessary freight burden imposed by routing the inward and outward shipments through North Atlantic ports.

Can you give any illustration of the injustice of this condition? Yes. For instance, sugar from Cuba or coffee from South America, destined for consumption in the territory served by Atlanta, goes on ships right past Cumberland Sound, fully 700 miles to New York. Then it is hauled by rail back to Atlanta, about 800 miles. If the same ship put into Cumberland Sound (distant from Atlanta only 300 miles), it would save 700 miles of useless sea haul and 500 miles of useless rail haul, and the consumer would benefit by the reduced freight tax imposed upon the product. The same is true in varying degrees of all the great distributing centers in the southeast and in the Mississippi Valley, such as Birmingham, Chattanooga, Memphis, St. Louis, and Kansas City.

Can you give a definite instance illustrating this? Yes. During the war, when the Government was trying to save coal and when New York Harbor was terribly congested, a man living at Macon, Ga. (200 miles from Cumberland Sound), received an order for 9,000,000 barrel staves and 1,000,000 barrel heads to be shipped to Pernambuco, Brazil, via New York. As a result, this enormous volume of freight had to be taken to New York, with 800 miles of rail haul as against 200 miles to Cumberland Sound and had to be taken from New York down south past Cumberland Sound to Pernambuco, with a consequent useless sea haul of nearly 700 miles. The Government controlled the railroads, owned the shipping, and had the right to route shipments. By routing this shipment via Cumberland Sound and sending it there over existing railroads, and by instructing the ship to receive the cargo at that point, this useless rail and sea haul could have been avoided.

You have stated that the inland waterway project is to extend from Portland, Me., around Florida to the Rio Grande. Would not the proposed canal, by cutting off the peninsula of Florida, greatly shorten this waterway, with consequent saving in money and an enormous saving in time? Yes. About 900 miles of inland waterway along the east and west coasts of Florida would be avoided, and this would be a fair offset against the cost of the canal. The time saved in the trip would be a permanent and continuing asset to commerce.

Would any other advantages accrue by avoiding the route around Florida? Yes. Primarily, the dangers of the Florida Straits would be avoided. That these dangers are very real is evidenced by the fact that, in his report made in 1876, Gen. Gillmore states that in one court at Key West, in 1873, there were 700 salvage cases decided. These great dangers mean additional insurance premiums and consequent additional costs of transportation.

Moreover, as regards Mississippi River commerce, the route around the southern end of Florida is subject to a very peculiar and striking objection:

One of the greatest products of the Mississippi Valley is corn. This corn, when destined for Europe, would naturally be shipped down the river to New Orleans, and then, by trans-Atlantic steamer, to Europe. But a curious natural condition has interfered with this traffic and has greatly curtailed the transportation of corn by ship from the Mississippi Valley to Europe.

This natural condition is that the Gulf Stream forms in the Gulf of Mexico some little distance southeast of the mouth of the Mississippi River. The Gulf Stream then sweeps around the southern end of Florida and continues northwardly practically parallel with the eastern coast of Florida, until it reaches the northern edge of Florida, when it bends northeasterwardly and flows over toward the British Isles.

As a result, ships loaded with corn coming out of the Mississippi River and destined for Europe almost at once get into the Gulf Stream and stay in it during the entire trip around Florida. During certain months of the year the heat and humidity of the Gulf Stream causes the corn to sprout and become worthless. As a consequence corn shipped by this route is known in European markets as "Gulf corn"; and if not rendered worthless by the trip, must be sold at a heavy discount.

By the building of the proposed canal and waterway there are avoided the delay and cost of transshipment from river barges to ocean-going vessels at New Orleans; there are avoided the heat and humidity of the Gulf Stream; there are avoided the dangers of the Florida Straits with the added insurance premium; and there are avoided 450 miles of useless steaming with its added cost and added delay.

Does the United States Government own any property in the vicinity of Cumberland Sound? Yes. On the Georgia side the United States Government owns 720 acres of highland, with a valuable water frontage abutting on the northern side of Cumberland Sound. This property was acquired in 1818, a little over 100 years ago, and is known as "Point Peter Reservation."

On the southern or Florida side of the sound, at the northern and eastern end of Amelia Island, the United States owns about 1,500 acres, known as "Fort Clinch," on which fortifications were built many years ago. This tract commands an extensive water front on the sound.

Are either of the tracts owned by the Federal Government suitable for coal piers? Yes; the Point Peter Reservation is especially suited for this purpose. It embraces high ground fronting on the sound and extending back in a V-shaped strip for some distance. On account of its elevation, and its frontage on deep water, coal piers can be cheaply constructed, and the tract is ideally located for installation of railroad tracks for handling coal in large quantities.

Does the State of Georgia own any property on Cumberland Sound? Yes; the State of Georgia owns several thousand acres in this immediate vicinity. Particularly, it owns the land on both sides of Point Peter Reservation, that part of it to the east of Point Peter Reservation having an extensive frontage on Cumberland Sound, and that part to the west of it having an extensive frontage on the St. Marys and North Rivers. This is some of the most valuable water-front property in the vicinity.

Describe more fully the lands owned by the Federal Government. Point Peter Reservation is about 5 miles from the entrance to the harbor of Cumberland Sound between the jetties.

On the Florida side the enormous holdings of the Federal Government at Fort Clinch on the northern end of Amelia Island, embracing several miles of water front, afford unusual facilities for coal piers, wharves, dry docks, ship-repair facilities, and other needed works. This land is very high and is located at the shore end of the southern jetty not more than 3 miles from the entrance to the harbor. In addition, the most valuable docks now at Fernandina are owned by the United States Government.

Does the State of Florida own any property in the vicinity of Cumberland Sound? No.

Is there any other publicly owned property in this vicinity? Yes. The city of St. Marys owns a great deal of the most valuable water frontage on the St. Marys and North Rivers. It has constructed a municipal dock at the end of the main street of the town on a small part of this property and utilizes the same.

Would Cumberland Sound offer facilities for the construction of dry docks, shipyards, and provisions for the repair of ships? Yes; the great quantity of water-front property adjacent to deep water, together with the natural conditions and the geological formation, makes it possible to construct dry docks, repair facilities, shipyards, and wharf facilities of every kind at a minimum of cost.

Does Cumberland Sound offer a good anchorage and is it a safe harbor? Yes. The anchorage is excellent and the harbor is completely landlocked. Moreover, the tropical storms which so frequently do great damage to the Gulf and southern Florida ports do not come as far north as this point. Practically,

no storm has ever occurred at Cumberland Sound, so far as can be learned, which would endanger ships at anchor there.

Is Cumberland Sound a desirable location for coal piers, dry docks, and repair facilities for shipping? Yes. It is 500 miles farther south than is Norfolk and is that much nearer the Panama Canal. There are no danger points like Cape Hatteras or the Florida Straits in that vicinity. On account of its nearness to the ocean, the effect of making this a coaling and fuel point would be just as if a coal pile were maintained for vehicular traffic on the side of a road. A vessel would come from the open sea to the coal pier in 30 minutes, secure its supply of coal, and return to the open ocean in 30 minutes additional. Its accessibility to the open ocean also enhances its value as a repair point. Its nearness to the shipping lanes, and particularly its location on the main route to the Panama Canal, insures its continued value for these purposes.

Is there fresh water available at Cumberland Sound in ample quantities for shipping? Yes and no. In the vicinity of Cumberland Sound flowing artesian water can be obtained by sinking wells of a depth of from 300 to 500 feet. This water flows freely under its natural pressure onto the second stories of buildings. It is clear and somewhat impregnated with sulphur.

But this water is not suitable for steaming purposes, and the supply for that purpose will have to be developed.

Such a supply can be developed at reasonable cost, probably from lakes and ponds on the Florida side, and certainly it can be piped down from the St. Marys River, a distance of a few miles, being taken from the river beyond the point where it is brackish. The fresh water of the St. Marys River is especially good, both for drinking and boiler purposes.

It is frequently stated that fresh water can be secured for boiler purposes at Savannah and Jacksonville, and it would be so easily secured at Cumberland Sound. The answer is that if a ship will go up the St. Marys River the distance that Savannah and Jacksonville are distant from the sea it will find an equally desirable supply of fresh water. As a matter of fact, excellent water can be secured from the St. Marys River at a very much shorter distance from the ocean. With a sea-level canal, of course, the St. Marys River will be brackish for 61 miles, throughout the portion utilized for the canal. But in that case fresh water can be readily obtained in any desired quantities from other near-by streams at a reasonable cost.

Do Cumberland Sound and the near-by waters afford facilities and safe bases for hydroplanes? Yes. Adjacent to the sound are numerous large sheets of shallow water, which would be ideal for the use of hydroplanes in large numbers.

Is there any other port on the South Atlantic coast offering these same facilities? No. No other port is so near to the sea, so completely landlocked, and at the same time so easy of access. In addition, no other port, for reasons already stated, is available as a terminus to a canal and waterway extending the Mississippi River to the Atlantic Ocean, and thereby becoming the terminal for the handling of the traffic of the Gulf and Mississippi River States, embracing nearly one-half of the territory of the United States.

What is the relation of Cumberland Sound to Atlanta, the great distributing point of Georgia? The distance from Cumberland Sound to Atlanta is 297 miles. Direct trains run from Atlanta to Jacksonville past Folkston, Ga.—32 miles from St. Marys. The railroad now operating from St. Marys to Kingsland, Ga., on the seaboard (a distance of 10 miles) has acquired and graded a right of way to Folkston. With that part of the track completed (a distance of 22 miles) through trains from Atlanta could run to St. Marys, and this would be the natural port of Atlanta.

Has any effort ever been made to connect Atlanta directly with Cumberland Sound? Yes. The Atlantic-Waycross & Western Railroad (which is the railroad operating from St. Marys to Kingsland) has obtained the necessary charter rights to extend its tracks from Kingsland to Waycross and from Waycross to Fort Valley, and thence to Atlanta. Much of the right of way has been obtained and a good deal of it has been graded. Various concessions (in the shape of right of way, contracts for grading, etc.) have been secured. The consent of the Railroad Commission of Georgia has been obtained to the necessary bond issue. Except for the breaking out of the World War, it is probable that the road would have been constructed by this time.

Is the State of Georgia, as such, especially interested in the construction of such a road? The State of Georgia has no financial interest in the Atlantic-Waycross & Western Railroad, but the State owns a railroad running from

Chattanooga, Tenn., to Atlanta, and that road would be greatly enhanced in value if it could be extended from Atlanta to the sea. Doubtless an extension of the Atlantic-Waycross & Western to Atlanta would result in some proper arrangement with the State-owned road, thereby making Cumberland Sound the Atlantic seaport, not only of Atlanta but of Chattanooga as well.

Is there any way of estimating what would be the cost of this sea-level canal and waterway? There is none, until a complete survey is made, showing the amount of earth to be removed. Rough guesses (which are nothing but guesses) have been made that the completed project would cost between \$100,000,000 and \$200,000,000—probably nearer the \$200,000,000 figure.

Understanding that the proposed canal and waterway would connect New Orleans and the Mississippi River with Cumberland Sound, compare this estimate of \$200,000,000 with the cost of a double-track railroad, terminals, equipment, etc. (approximately 1,000 miles long, which is about the distance from New Orleans to Cumberland Sound). The cost of a 1,000-mile double-track railroad, with suitable terminals, etc., is impossible to estimate without knowing all the details of the territory which it is to traverse. If the road were constructed from New Orleans to Cumberland Sound it would have to cross a great many navigable streams with expensive bridges, etc. While no estimate of cost of such a railroad, with terminals, equipment, etc., can be made accurately, it is probable that its cost would be as great as would be the above suggested cost of the canal.

What would be the capacity of the canal and waterway as compared with a double-track railroad? Easily one hundred times as great.

What would be the cost of maintenance and operation of the canal and waterway as compared with the railroad? Probably not one one-hundredths as much, after the canal and waterway were completed.

What would be the comparative cost for freight by the rail route and the water route? The freight charge by the water route would be much smaller than the charge by the rail route. Moreover, the lower water rates would hereafter necessitate a meeting of these lower rates by the rail carriers, thus giving to the entire section between the Allegheny and Rocky Mountains the benefit of perpetual low rates to the Atlantic seaboard, with resultant benefit to the commerce of that section.

While under this project Cumberland Sound would be the terminus of the Mississippi River and the Atlantic port for the shipment of the products of the Gulf and Mississippi River States, where would the boats, which would bring down this commerce, get their return cargo? At Cumberland Sound. The ships loading for export at Cumberland Sound would, on their return voyages, naturally bring return cargoes to be delivered at that point. The same transportation facilities which make it possible to collect the products of a great part of the country at this point would make it possible to distribute incoming cargoes throughout the same territory and over existing lines of railroad throughout the whole United States. With this canal and waterway built, Cumberland Sound should assume among the Atlantic ports south of Cape Hatteras the same commanding position that New York now has among the Atlantic ports north of Cape Hatteras. And this development of Cumberland Sound would be reflected in the increased commerce and business at all the other South Atlantic and Gulf ports, particularly at Jacksonville, Brunswick, Savannah, Charleston, and Wilmington, N. C.

Would the development of Cumberland Sound, as indicated, help New Orleans? Yes. The business of the port of New Orleans would be increased. Great numbers of ships going direct to and from New Orleans would simply use the waterway and canal instead of the open Gulf, thereby saving time, distance, and money and reducing their insurance rates. New Orleans would be 450 miles nearer to the Atlantic Ocean, to Europe, to New York, and to eastern seaports. As a great distributing center, the business of New Orleans, both in exporting and importing, would be increased. In addition, it is a well-known fact that additional transportation facilities always build up a territory. The volume of trade of the entire section served by this canal would necessarily grow by leaps and bounds with these added facilities, with the result that New Orleans, as a great distributing point, would increase its trade. While Mississippi River barges could come to Cumberland Sound without transshipment, conversely transatlantic and coastwise steamers could go through the canal and waterway to New Orleans with a saving of time, distance, and money.

Would the building of a barge canal benefit New Orleans as much as the building of a sea-level canal? No. A barge canal would mean that Mis-

Mississippi River barges could come to Cumberland Sound, but would not afford any facilities for transatlantic and coastwise ships to go through to New Orleans. A sea-level ship canal would enable all kinds of traffic to move in both directions. Moreover, the passage through a barge lock canal would require 40 hours. Through a sea-level ship canal probably not more than 20 hours would be required. Consequently, a sea-level ship canal would place New Orleans 20 hours nearer to New York and Liverpool than would a barge lock canal.

Have cities like Pittsburgh, Chicago, St. Louis, and other central western distributing points a direct interest in the building of this canal? They have. When the canalization of the Ohio River is completed, Pittsburgh could ship heavy products by floating them down the Ohio and Mississippi Rivers, through the proposed waterway and canal to Cumberland Sound, for shipment abroad, or through the Atlantic coast inland waterways to New York and eastern points. The canal would never be closed by ice. Chicago and other distributing centers in the Mississippi Valley could ship by already completed waterways via this route. The result would be added facilities and reduced freight rates on all products of that section to the Atlantic coast and to Europe.

What is the international bearing of this canal and waterway project? 1. The prosperity of the United States depends on its international trade. Every added facility for carrying on this trade places the United States in a better position. A system of water transportation which will give to one-half the United States enormous additional transportation facilities and decidedly lower freight rates must affect favorably the volume of trade which we can do and the resultant annual balance in our favor.

2. Moreover, the United States to-day owns a great merchant marine. The maintenance of a commanding position in shipping depends not only upon the ownership of ships but upon adequate harbor, repair, dry dock, coaling, and fuel facilities, and upon the facilities for delivering the great volume of our products at the seaports, thereby furnishing employment for our ships. For the proper development of the merchant marine and of international trade the South Atlantic ports must be opened up. With Cumberland Sound as the terminus of the Mississippi River, a great port on the South Atlantic will be developed. This port will be the nearest great South Atlantic port to Panama, and will be an additional coaling port.

In general terms, will the opening of Cumberland Sound as a great port affect the traffic through the Panama Canal? A ship from New York, destined to Manila, can go via the Suez or via the Panama Canal. The difference in distance is about 26 miles, making it immaterial which route is taken, so far as time and cost and coal consumption are involved.

But from Cumberland Sound to Manila the Panama route is over 500 miles shorter than the Suez route. The development of Cumberland Sound as a great import and export point would necessarily mean a preference of the Panama route over the Suez route, with resultant benefit to this great asset owned by the United States Government.

At this time, when we are burdened with billions of war debt, and when the entire country advocates a curtailment of expenditures, the most rigid economy, and the postponement of all new enterprises and works of improvement, how can you justify the expenditure of, say, two hundred millions on this enterprise, and how can you expect Congress to consider favorably such an enormous appropriation? The question is a fair one, and must be answered if favorable action by Congress is to be hoped for.

It is believed that this expenditure is not only justified but imperatively demanded by the soundest business and governmental principles. Among the many reasons for the immediate construction of this canal and waterway special attention is called to the following:

(1) One of the few tangible assets owned by the Government as a result of the many billions expended during the World War is our new merchant marine. The vast sums expended on training and maintaining our Army and Navy, on munitions, airplanes, guns, etc., produced nothing which can aid us in meeting our burden of national debt, in solving our economic problems, or in meeting the demands of reconstruction.

It therefore behooves the United States to utilize and develop this great asset of a mercantile marine to the fullest extent, and by obtaining a fair share of the world's carrying trade to produce a national revenue that will aid in meeting our national obligations.

To contend that the shipping business of the United States can be properly developed under the old policy, which, as we have shown, has practically disre-

garded and failed to use all the great Atlantic ports south of Cape Hatteras, is absurd. Obviously the routing of exports and imports almost exclusively through North Atlantic ports has imposed a great and unnecessary burden and freight charge upon the vast producing sections of the South and Middle West. Those are the sections where raw materials and agricultural products are made available for the world markets. Such products being heavy and bulky are least fitted to bear the burden of useless rail and sea hauls or to pay unnecessary freight charges. The imposition of such charges means that they are less able to compete in foreign markets with similar products from other nations. It means an unnecessary national burden.

The products of these sections can fairly fulfill their work of holding in America's favor the international trade balance only if they are afforded every possible facility for export and are subjected to a minimum of freight and port charges. To assure this, they must have the use and benefit of the nearest and most cheaply accessible ocean gateways. They must be permitted to use the South Atlantic ports and be provided with transportation facilities to reach those ports. With these ports opened and new transportation avenues to such ports provided, any enormous increase in our products for export can be reasonably expected, and these exports will not only keep the balance of international trade in our favor but will furnish the tonnage necessary to the successful operation and upbuilding of our merchant marine.

(2) The South and lower Mississippi Valley must have additional transportation facilities if their waste lands are to be made productive and if they are to be the granary and stock farm of the Nation. Agricultural products must be accessible to a market or else the farmer can not afford to raise them, and the market must be certain and capable of absorbing the entire supply. This means that the South and Middle West must have an export market where the whole world is their customer, and they must have adequate and cheap transportation facilities to reach that market.

In the past dependence has been placed on railroads; but railroad construction is at a standstill and no material additional railroad facilities can be expected for years to come. What is to be done? Tens of millions of idle acres are waiting the provision of transportation so that they can be made productive, and it is admitted that no new railroads can be expected.

But there exists in the South and Central West the most far-reaching and extensive system of river transportation in the world, extending to every section and potentially able to meet the transportation requirements. Nearly all of these rivers flow south into the Gulf of Mexico. They are not connected with each other, nor do they afford an artery of communication with the Atlantic seaboard or to the eastern and foreign markets. But by opening up the intercepting inland waterway along the northern edge of the Gulf, every one of these natural water highways is connected, and by extending this waterway to the Atlantic through the proposed canal over 10,000 miles of water highways that are now largely useless are made a part of a great system extending to the Atlantic seaboard and making possible the delivery of the products of all this section at the lowest freight charge to an export point, from which they can reach the markets of all the world. To open up this intercepting trunk line, which makes immediately useful fully 10,000 miles of river transportation, will largely solve the transportation problems of this half of the United States, will enhance the value of every acre of its land and every pound of its products, and will materially enhance the national prosperity and welfare.

(3) And the opening of this trunk line of water transportation, as we have already shown, will also bring into the export market interior supplies of coal that can not now be delivered at the seaboard. With the world demand for coal at this time, with the obligation on the United States to supply that demand out of its vast deposits, and with the commanding position of coal in world commerce, surely the economic justification for the expenditure of the amount needed to furnish the transportation essential to the delivery of that coal for export needs no further argument. Similarly with fuel oils and gasoline, timber, and cotton.

(4) The man who owes a great deal of money must often incur large additional expenditures so as to increase the volume of his business and pay off his debts from his profits. This is our national position to-day. We must increase our business, and particularly our international trade. We must provide facilities for doing this. We can't afford to wait.

Under these circumstances the question seems to be, not "Can the United States afford to build this canal and waterway?" but "Can the United States afford not to build this canal and waterway at once?"

And this is outside of the value of the canal and waterway as a factor in our national defense. By making more effective our battleships and war craft, through a short cut between the Atlantic and the Gulf, we as truly enhance the effectiveness of our Navy as if we had added to it a number of fighting units. Those fighting units quickly become obsolete and worthless, but the value of the canal constantly increases. Can not the Federal Government wisely expend an amount equal to the cost of half a dozen battleships on this permanent economic and naval asset?

Why can not tolls be exacted of vessels using this canal, just as is done with the Panama Canal? They could be. But such a policy would be unwise. The proposed canal and waterway is primarily a work of internal improvement, lying entirely within the United States. Its primary purpose is to aid in the development of this country and to subserve its needs. To charge tolls for its use would seriously increase the domestic freight charges, would limit the value and the beneficial effects of this new avenue of transportation, and would minimize the benefits from its construction.

Is there any valid reason why foreign ships should not be charged reasonable tolls for its use, while American bottoms could use it free of charge? There is no apparent reason against such a policy, and the question would be merely one of expediency. By giving such a preference to American ships, a great impetus and help would be afforded to our merchant marine.

Would the building of this canal and waterway enhance the value of lands in its vicinity, and to what extent? It is confidently believed that the immediate and direct enhancement of value in lands would offset the entire cost of the project. There are approximately 230,000,000 acres of land in the five States of Georgia, Florida, Alabama, Mississippi, and Louisiana. It is probable that fully one-half of this is now practically not used; a large part of it existing in the shape of cut-over pine lands, undrained swamp lands, and other lands inaccessible to transportation. The building of this canal would primarily drain the 400,000 acres in the Okefenokee Swamp and the more than 100,000 in the Bay Swamp, thus bringing into use 500,000 acres of the richest agricultural lands in the country. That land should readily be worth from \$50 to \$100 an acre when it is so drained.

But assuming that one-third of the idle acres of the five States named, amounting to 40,000,000 acres or more, are enhanced in value to the extent of \$10 per acre. This would give an added land value of \$400,000,000, certainly twice as much as the whole project will cost. That such a value will be immediately produced can hardly be questioned. Fully this amount of land, which is now a drug on the market, will be made immediately accessible to what will probably be the greatest avenue of transportation on the continent. An influx of a large farming population will certainly follow. The demand for these lands and their development agriculturally will enhance their value in most instances far more than \$10 per acre; for it should be realized that some of the best agricultural land in the United States is to be found in this section.

Moreover, the enhancement in value, due to additional means of transportation, should be felt up the Mississippi Valley at one end and along the Atlantic seaboard, south of Cape Hatteras, at the other. It certainly seems reasonable to assume that the immediate enhancement in land values in the territory benefited will many times exceed the entire cost of construction.

While such an enhancement in land values might take place, yet the Federal Government, which will build this canal, does not tax land directly. Is it reasonable to assume an enhancement in values subject to Federal taxation, from which new subjects of taxation the Federal Government can reasonably hope to secure an income sufficient to pay the interest on the money invested and to ultimately repay such investment out of such new taxes? Yes. The Federal Government does not tax the land which will be benefited; but it does tax the income and the excess profits derived not only from the operation of the land but from every character of business which would be benefited by this project. It is impossible, of course, to make any definite statements in this connection, but it is reasonable to assume that at the taxes derived by the Federal Government from income and excess profits built up by the great industries that will naturally come into being in handling the business of the Mississippi Valley, of the Gulf and South Atlantic States developed by this avenue of transportation will far more than pay the interest on the money required to build the canal and will ultimately return the principal through the operations of principles similar to those applicable to a sinking fund.

Has Cumberland Sound as a possible coal port any distinct advantages over Hampton Roads or the Chesapeake Bay district? Yes; it has one distinct

advantage other than those already enumerated. In the winter of 1918, during the World War, when the movement of coal and of troops was essential, Chesapeake Bay was frozen over so solidly that ships were unable to move for a period of 10 days or two weeks. Such a condition could never exist at Cumberland Sound. It is a warm-water port, and is never frozen over.

What would be the great products principally exported from Cumberland Sound upon the opening of the canal and waterway? Principally agricultural products, including cotton, corn, wheat, rice, etc. Also timber and timber products. Also, coal, iron, phosphate rock, and oil. It would be especially a port for handling what might be termed raw products, because the great agricultural section of the country would drain into the mouth of this funnel and the great mineral regions of Alabama and near-by States would likewise come through it. Moreover, the manufactured cotton goods and the other manufactured goods of the Mississippi Valley and of the Southeast would gradually seek this port as the nearest and most valuable gateway for eastern and foreign trade. The volume of this business would greatly increase as the section was developed industrially.

Has this canal and waterway project been indorsed by any public officials or organizations? Yes. It has received the indorsement of the Legislatures of Georgia and Florida and of the governors of the two States. It has twice received the unqualified indorsement of the Southern Commercial Congress. It has received the indorsement of the Georgia Chamber of Commerce, of the North Florida Chamber of Commerce, of the Atlanta Chamber of Commerce, of the St. Marys Board of Trade, of the Fernandina Chamber of Commerce, of the Waycross (Ga.) Chamber of Commerce, of the Tallahassee Chamber of Commerce, of the Panama City (Fla.) Chamber of Commerce, and of numerous other commercial and civic bodies. It is also indorsed by great numbers of leading men in the States of Georgia and Florida and throughout the country.

Has any organization ever been formed for the purpose of promoting the building of this canal and waterway? Yes. A number have been formed in the past, and two such organizations have been formed recently. In June, 1918, on the invitation of the governor of Georgia, a large delegation of public men and of prominent business men from the United States visited Cumberland Sound and inspected the sound and the St. Marys River for a distance of about 50 miles above the sound. They were accompanied by the governors of Georgia and Florida. Two days were spent in the inspection and in considering the project, and representatives of various Federal departments were present. As a result there was formed an organization known as the Mississippi, Gulf and Atlantic Canal Association, with the governor of Georgia as chairman, and with the declared purpose of securing the immediate building of the canal by the Federal Government. The purposes of this association were indorsed by the Legislature of Georgia in the act passed August 19, 1918.

In December, 1919, an invitation was issued by the governors of Georgia and Florida and by various commercial organizations to a large body of public men and citizens to attend a conference and inspection trip to Cumberland Sound on December 11-12, following the meeting of the Southern Commercial Congress at Savannah on December 8-10, at which meeting the canal project was fully discussed. On December 11 these invited guests, accompanied by representatives of various organizations and by foreign diplomats, were carried from Savannah to St. Marys aboard the U. S. S. *Shawmut*, tendered by the Navy Department for use for this trip. The *Shawmut* was accompanied by six flying boats, which flew from Savannah to Cumberland Sound. The party arrived at Cumberland Sound on the 11th, had the project fully explained, and inspected the physical conditions, and on the 12th, at Fernandina, passed a resolution, from which we quote as follows:

"Whereas the proposed plan for the construction of a canal from Cumberland Sound to the Gulf of Mexico and the Inland Waterway, thence to the Mississippi River, is national in its import and international in its relation:

"*Resolved, by this joint assembly, representative of the South, in formal session in Fernandina*, That a national committee of fifty be organized, representative of the States affected, from the Dakotas to the South Atlantic and Gulf, charged with the responsibility of urging immediate action on the part of the Congress of the United States in making adequate appropriations for the survey of the route and the completion of the canal."

As the conference had to adjourn, a committee of seven was named, with full powers to carry on the work of the conference, to select the national committee of fifty, to see that the same was organized, and to turn over the project for

their handling. The names of this committee of seven appear on page 2 of this pamphlet.

Where can I get additional information in regard to this canal project? Specific reports, maps, and data, published by the Government and showing various phases of the project, can be obtained in Washington at the Government departments by application to your Senator or Congressman. State reports, maps, etc., can be obtained by application to the respective secretaries of state. Other information can be obtained by application to the committee of seven, named on page 2.

What publications, Government or otherwise, will give me further information about this canal project? Attached to this pamphlet is a partial bibliography in reference to this canal matter. By examining the same, you can decide just what publication will answer the questions in which you are interested.

What is the present status of the canal project? At present the direction of the effort to secure the survey and building of a sea-level canal is in the hands of the committee of seven. They are busily engaged in organizing the committee of fifty, who will take charge of the effort as soon as organized, and in the meantime this committee of seven is endeavoring to call national attention to the project.

From the standpoint of legislation, several bills are pending before Congress. In particular the bill introduced by Congressman Frank Clark, of Florida, known as House bill 10919, Sixty-sixth Congress, second session, introduced on December 5, 1919, is pending. This bill provides for an appropriation of \$100,000 for a survey and report on the cost of a sea-level ship canal, of a lock ship canal, and of a lock barge canal. Hearings on this Clark bill will be held before the House Committee on Railways and Canals on the 29th of January, 1920, at Washington.

What can I do in aid of this canal project? Get in touch with the committee of seven and fully inform yourself as to the project. When satisfied as to its merit see that the matter is discussed and advocated by commercial and civic organizations and by the newspapers in your vicinity. Urge the commercial and civic organizations to impress upon your Congressmen and Senators the necessity for prompt action on the Clark bill and the need for constructing at once this sea-level canal and waterway. Bring this matter to the attention of your governor and State legislature and urge on them action similar to that of the Legislature of Georgia above described. Use every proper method to make the project generally known, to secure indorsement of the same, and to arouse public interest in the matter, and advise the committee of seven of your activities.

PARTIAL BIBLIOGRAPHY OF CUMBERLAND SOUND, GULF, AND MISSISSIPPI CANAL PROJECT.

(1) Gen. Q. C. Gillmore's reports of 1876 and 1880 on barge and ship lock canals from Cumberland Sound to the Gulf of Mexico, prefaced by statement of Maj. Robert Gamble, of Tallahassee, Fla., made in 1894, as to extending the proposed canal from St. Marks to St. Georges Sound, and opening the inland waterway thence to the Mississippi River, with maps and estimates of cost. Republished in 1918 for the use of the Senate Committee on Commerce under the title "Ship Canal Across Florida," Senate committee print, Sixty-fifth Congress, second session.

(2) Intracoastal Waterway Across Florida Section. House Document No. 233, Sixty-third Congress, first session, printed in 1913, with maps and estimates. Being a report on five alternative routes for a canal from the Atlantic to the Gulf.

(3) St. Marys River, Ga. and Fla. House Document No. 540, Sixty-fourth Congress, first session, with maps and estimates, 1916. Being a report on the cost of obtaining 22 feet of water at low tide (28 feet at high tide) from Cumberland Sound to the city of St. Marys, Ga., 5 miles up the St. Marys River.

(4) Hearings on the Subject of the Construction of a Canal from Cumberland Sound, Ga. and Fla., to the Gulf of Mexico. Before the House Committee on Rivers and Harbors on September 6, 1918.

(5) Intracoastal Waterway, Beaufort, N. C., to Key West, Fla., Section, with maps, House Document No. 229, Sixty-third Congress, first session, 1913.

(6) Inside Route Pilot, New York to Key West, 1916. Third edition, with maps, being Serial No. 52, published by the United States Coast and Geodetic

Survey, of the Department of Commerce. Can be purchased for 20 cents from United States Coast and Geodetic Survey at Washington.

(7) Inside Route Pilot, Key West to New Orleans, 1914. With maps, published by the United States Coast and Geodetic Survey, of the Department of Commerce. Can be purchased for 20 cents from United States Coast and Geodetic Survey at Washington.

(8) The Coal Fields of the United States. General introduction by Marius R. Campbell, with maps, showing all coal deposits in the United States. Being Professional Paper 100-A, pages 1-33, published February 24, 1917, by the United States Geological Survey at Washington, from whom copy can be purchased.

(9) Professional Memoirs, Corps of Engineers, United States Army and Engineer Department at Large. May-June, 1916. Published bimonthly at the Engineer School, Washington Barracks, D. C. See page 267 (intracoastal canal in Louisiana) and page 301 (the transportation of coal on the Warrior system). See also same publication, No. 33, vol. 7, May-June, 1915. Maps, etc., can be purchased on application to the Engineer School, Washington Barracks, D. C.

(10) Report of the board of internal improvement on the contemplated canal between the Atlantic and the Gulf of Mexico, dated February 19, 1829. This report probably available in Washington. (Referred to in No. 1.)

(11) Report of Lieut. John W. Pickett, dated Washington, March 6, 1832, on water supply available from infiltration. Probably available in Washington. (Referred to in No. 1.)

(12) Survey of Maj. Perrault, as reported by Gen. Bernard, February 19, 1829, showing height of swamp above tide. Probably available in Washington. (Referred to in No. 1.)

(13) Lieut. M. L. Smith's studies of loss by evaporation, in connection with a canal route connecting with the St. Johns River, Fla. Probably available in Washington. Date unknown. (Referred to in No. 1.)

(14) Col. P. H. Raiford's statement before Senate select committee on December 24, 1873. (Referred to in No. 1.)

(15) United States Coast Survey map of Florida for 1864. Shows streams feeding the swamp. (Referred to in No. 1.)

(16) United States Coast Pilot, Atlantic coast, section O, Cape Henry to Key West. United States Coast and Geodetic Survey.

(17) United States Coast Pilot, Atlantic coast, section E, Gulf of Mexico from Key West to the Rio Grande. United States Coast and Geodetic Survey.

(18) House Document No. 697, Sixty-second Congress, second session, dated October 28, 1910. This is the report on which was based an appropriation of \$19,450 in the river and harbor act of July 25, 1912, for securing 17 feet of water to St. Marys. This depth was obtained by an expenditure of \$14,450, leaving \$5,000 available for snagging operations as far up as necessary. This is the only money expended on the St. Marys River, so far as is known. (Referred to in No. 3, p. 6.)

(19) The Atlantic Coast Tide Tables for eastern North America for the year 1917. United States Coast and Geodetic Survey. Price, 10 cents.

(20) The Atlantic Intra-Coastal Waterway, Official Survey Lines and Present Status of the Work. Published by the Atlantic Deeper Waterways Association, 815 Crozer Building, Philadelphia, 1915.

(21) Lieut. R. L. Hunter's examination made in 1857 for the State of Georgia. No copy obtainable, only meager extracts; probably available in State records at Atlanta. This is a survey of Okefenokee Swamp. (Referred to in No. 1.)

(22) Examination of swamp made in 1875 by Mr. C. A. Locke under the directions of Dr. George Little, State geologist of Georgia. Available in Georgia State records at Atlanta. (Referred to in No. 1.)

(23) Bulletin No. 25, Geological Survey of Georgia: A Preliminary Report on Drainage Reclamation in Georgia. Embracing The Drainage Situation in Georgia, by the Georgia State geologist, and Drainage Examinations and Surveys in Georgia, by United States Department of Agriculture. Obtainable in Atlanta from Georgia Geological Survey.

(24) Bulletin No. 32, Geological Survey of Georgia, Agricultural Drainage in Georgia. 1917.

(25) Georgia, published by Georgia State Department of Agriculture, April, 1916.

(26) Soil Survey of the Waycross Area, Georgia, United States Department of Agriculture, 1907.

(27) Railroad Map of Georgia, 1916, published by the Railroad Commission of Georgia.

(28) Agricultural Map of Georgia, 1916, issued by Georgia Department of Agriculture.

(29) An act passed by the General Assembly of Georgia in reference to the construction of a canal from the Atlantic Ocean to the Gulf of Mexico and an inland waterway thence to the Mississippi River. Approved on August 19, 1918. Can be obtained from the Georgia secretary of state at Atlanta.

(30) A similar act by the General Assembly of Florida, indorsing the canal project, passed in 1919. Can be obtained from the Florida secretary of state at Tallahassee.

(31) A Needed World Gateway. Statement of Hugh M. Dorsey, the governor of Georgia, to a conference on an Atlantic-to-the-Gulf canal on June 10-11, 1918. Pamphlet with map of canal. A strong and comprehensive statement. Copies can be obtained from the governor of Georgia.

(32) Address of Hugh M. Dorsey, governor of Georgia, at the Atlantic-to-Gulf canal conference at St. Marys, Ga., on June 11, 1918. Copy can be obtained from the governor of Georgia.

(33) Rand-McNally Map of Florida.

(34) The Mineral Resources of Alabama, Geological Survey of Alabama, 1904.

(35) Geologic Atlas of the United States, folio 175, Birmingham, Ala., 1911.

(36) The following maps issued by the United States Coast and Geodetic Survey: St. Marys and Estuaries, No. 3; Sapelo Island to Amelia Island, No. 157; South Carolina and Georgia, No. 155; Savannah to Sapelo Island, No. 156; St. Marys Estuaries Southward, No. 158; St. Augustine Inlet to Halifax River, No. 159; Halifax River to Mosquito Lagoon, No. 160; Cape Canaveral, No. 161; Cape Canaveral Southward, No. 162; Jupiter Inlet, No. 163; Jupiter Inlet to Hillsboro Inlet, No. 164; Hillsboro Inlet to Fowey Rocks, No. 165; Florida Reefs, No. 166; Florida Reefs, No. 167; Florida Reefs, No. 168; Florida Reefs, No. 169; Cedar Keys to Dead Mans Bay, No. 180; Apalachee Bay, No. 181; Apalachee Bay to St. George Sound, No. 182; Apalachee Bay to Cape San Blas, No. 183; St. Josephs and St. Andrews Bay, No. 184; Choctawhatchee Bay, No. 185; Choctawhatchee Inlet to Pensacola Entrance, No. 186; Pensacola Bay to Mobile Bay, No. 187; Mobile Bay and Entrance, No. 188; Pensacola Bay Entrance, No. 413; Mobile Entrance and Eastern Part Mississippi Sound, No. 189; Fernandina Entrance, No. 453; Pensacola Bay, No. 490; North Pacific Ocean, No. 526; Fernandina to Jacksonville, No. 577; Map of St. Marys River, No. 614; Chesapeake Bay to State of Florida, No. 1001; State of Florida and Approaches, No. 1002; Gulf of Mexico, No. 1007; Washington Survey Blue Prints, No. 1112; West Indies, Central Indies, Gulf of Mexico, No. 1290.

In addition to that there was in 1918 a statement prepared by the governor of Georgia entitled "A Needed World Gateway," which is submitted as a part of the record.

(Said statement follows:)

A NEEDED WORLD GATEWAY.

The distance by sea from Portland, Me., to Key West, Fla., is 1,398 miles. The shore line is perhaps 1,800 miles. Cape Hatteras is just about half way between Portland and Key West; that is, it is approximately 700 miles from Cape Hatteras to Portland, and 700 miles from Cape Hatteras to Key West. About 90 per cent of the foreign commerce of the United States crosses that shore line. How that commerce, both import and export, is divided between the ports north of Hatteras and ports south of Hatteras, not including Key West, which is a Gulf and not an Atlantic port, is fully revealed by an examination of the reports of the Secretary of the Treasury. Taking this report for the year 1914, the following startling facts are revealed:

1914	North.	South.
Foreign vessels entered.....	10,725	645
Foreign vessels cleared.....	11,194	662
Customhouse receipts.....	\$245,430,843	\$315,132
Value of imports, duty.....	\$611,853,489	\$752,340
Value of imports, free.....	\$755,149,469	\$16,504,246
Exports.....	\$1,107,824,780	\$198,280,742

While from the foregoing it appears that 10,725 foreign vessels entered ports north of Hatteras during the year 1914, and 645 foreign vessels entered ports south of Hatteras, a somewhat closer examination of the record shows that at Miami, Fla., 163 foreign vessels entered during 1914, bringing imports worth \$31,147. Deducting the number of foreign vessels entered at Miami from the total number south of Hatteras, we have 482 foreign vessels, compared with 10,725. The total imports south of Hatteras amounted to \$17,256,585, as compared with a total north of Hatteras of \$1,367,002,958. The imports entering south Atlantic ports consisted chiefly of German potash and Chilean nitrate.

In the matter of exports a somewhat better showing is made for the south, because the exports north of Hatteras amounted to \$198,288,742, but these exports through south Atlantic ports consisted almost wholly of cotton, lumber, naval stores, and phosphate rock.

Contemplating the Atlantic shore line, New York is practically half way between Hatteras and Portland, and Cumberland Sound is practically half way between Cape Hatteras and Key West. Generally speaking, all ports north of Cape Hatteras have a channel to the sea of from 30 to 40 feet, ample anchorage area and dockage area, while no ports south of Hatteras has any such channel or dockage.

For reasons which are to be stated there is urgent need for the immediate development of the Cumberland Sound Harbor, which can at a trifling cost be made one of the great harbors of the world. Among the reasons for the immediate development of Cumberland Sound Harbor are the following:

1. The United States owns Point Peter Reservation, lying immediately on St. Marys River and Cumberland Sound, embracing 720 acres of land, which, if located at any port north of Hatteras, would be worth from \$1,000 to \$15,000 per acre.

2. The State of Georgia owns adjacent land equal or greater in amount, fronting the St. Marys River and on Cumberland Sound.

3. Cumberland Sound and the St. Marys River are never frozen.

4. The St. Marys River never overflows nor shoals.

5. The United States has already expended in the improvement of Cumberland Sound \$3,647,510.90 and for the improvement of the inland waterway between Savannah and Cumberland Sound the sum of \$509,298.17.

6. The expenditures so far made at Cumberland Sound were involved in the construction of north jetty and south jetty for the purpose of directing the waters of the St. Marys River on a straight line into the Atlantic Ocean, and experience demonstrates that the cost of maintenance of the channel, which is being gradually scoured by the St. Marys River, is practically nothing.

7. At an expenditure of less than half a million dollars a channel to the sea could be had, having a depth at mean low tide of 30 feet, at a minimum cost of maintenance after the construction of such channel.

8. On a direct line Cumberland Sound, or that part of it which is known as Amelia Basin, is only about 4 miles from the open sea, and Point Peter, the property of the United States, and the adjacent property of the State of Georgia, making about 1,500 acres, is only about 5 miles from the open sea.

9. Any ship, foreign or domestic, of any depth, once the improvement were made, could go from the open sea to her berth at Point Peter or St. Marys or Fernandina in less than 30 minutes without the aid of pilot or towboat, and after lading could return to the open sea within 30 minutes after leaving her berth.

10. The anchorage area at Cumberland Sound inside of the bar would be greater than the anchorage area of any great European port. Liverpool, England, has on the Liverpool side of the Mersey 427 acres of water area and 26 miles of linear quayage, and on the Birkenhead side 165 acres of water area and 9 miles of quayage. Liverpool, about the same distance from the open sea as Point Peter and the town of St. Marys, has a tide of 33 feet, and to overcome the difficulties of such a tide great anchorage basins have been excavated, at a cost of nearly \$150,000,000, in order that ships can enter and leave with the tide and confine in these basins still water and discharge cargo with convenience and safety. The port of London, on account of a tidal range of 18 feet, has long been provided with similar basins or docks, and these cover both sides of the Thames and stretch from London Bridge to Tilbury Docks, 26 miles below the bridge. The London port commission, called by the act creating it, port of London authority, has an estate of 2,588 acres, of which 529 acres are under water. Recently—that is to say, in 1908—London, in order to retain her world trade, reorganized her dock system, and in that year, at a cost of \$108,000,000,

took over the East India Docks, West India Docks, and various other docks within the city. Among the great London docks, Albert and Victoria Docks contain 182½ acres of water area; West India Docks, 105 acres of water area; East India Docks, 30 acres of water area. As already stated, the excavation of these great docks is made necessary on account of the tidal range. The same difficulty is present at Glasgow, which has a tide of 11 feet; at Antwerp, which has a tide of 13 feet; and at various other English and European ports. Hamburg, 75 nautical miles from the North Sea, has in the free port of Hamburg 785 acres of water area, but the situation is somewhat different. The depth of the Elbe at Hamburg at mean low water is 25.8 feet, and the basins at Hamburg are not protected by locks and gates, but are simply made deep enough to accommodate ships drawing 31 feet. The tide at Hamburg is 7 feet, so that the heaviest draft vessels, vessels drawing 31 feet, may enter and clear the harbor of Hamburg with the tide, while the mean low depth is 25.8 feet. At London, Liverpool, Glasgow, Antwerp, and so on, vessels entering the docks with the tide are compelled to close the gates in order to be undisturbed during the period of loading and unloading.

Cumberland Sound has a tide of 6 feet, and the development of the harbor could be on the same lines as those which have been followed at Hamburg with a 7-foot tide and at Rotterdam, which has a 5-foot tide. Standing on Point Peter Reservation, which has an elevation of 25 or more feet, one would look directly east upon Cumberland River, which is the salt estuary connecting Cumberland Sound and St. Andrews Sound and separating Cumberland Island from the mainland of Georgia; he would look into Amelia Basin and Cumberland Sound, which has a depth of from 40 to 70 feet; into Nassau River, which separates Amelia Island from the mainland of Florida, and into the St. Marys River. Within these waters is an anchorage area of any desired depth, greater than that of the greatest ports of Europe, and perhaps equal to the combined area of London and Hamburg.

11. Regarding New York as the central point between Cape Hatteras and Portland and Cumberland Sound, embracing Fernandina, Fla., and St. Marys, Ga., as a port halfway between Cape Hatteras and Key West, a natural question would arise involving the source of foreign commerce which might reasonably be expected to use this port as a gateway. A fair way of presenting the question would be to consider the origin, destination, and volume of foreign commerce and the relative distance between New York and Cumberland Sound in reaching and in distributing this commerce. Obviously the investigation would first lead to South America and to the West Indies. The commerce of the United States with South America and the West Indies for the year 1914 amounted to \$502,423,714. This does not include Porto Rico, whose commerce is classed as domestic and which in 1914 amounted to \$12,500,000. South American commerce, by reason of trade routes, divides itself naturally into Pacific coast South American commerce, north coast South American commerce, and east coast South American commerce. West Indian trade stands in a class by itself for reasons not necessary to be stated. The report of the Secretary of the Treasury for 1914 shows that American foreign trade with the Pacific coast of South America was \$60,892,689. This commerce must use the Panama Canal, which is 2,017 miles from New York and 1,550 miles from Cumberland Sound, giving to Cumberland Sound an advantage of 467 miles, and on a round voyage an advantage of 943 miles. American trade with the north coast of South America in 1914 was \$64,731,615, and LaGuire, Venezuela, is fairly illustrative as to that commerce, and the distance from New York to LaGuire is 1,847 miles, and from Cumberland Sound 1,550 miles, giving to Cumberland Sound an advantage of 292 miles, or 584 miles on a round voyage. American trade with the east, or Atlantic, coast of South America in 1914 was \$215,429,126.

As to this commerce, New York, as a North Atlantic port, and St. Marys, or Cumberland Sound, as a South Atlantic port, stand on an equal footing as to the length of sea voyage, because the distance from New York to Pernambuco is 3,698 miles, and the distance from Cumberland Sound to Pernambuco is identically the same. Both New York and Cumberland Sound have an advantage over Liverpool on Atlantic coast South American commerce of 364 miles, for the reason that the distance from Liverpool to Pernambuco is 4,062 miles, while from New York and Cumberland Sound it is 3,698 miles. All shipping between Europe and Atlantic coast of South America and between America and South America has to pass within the vicinity of Pernambuco, the trade route south being identical, regardless of the origin or destination of the traffic.

American trade with the West Indies in 1914 was \$261,391,284. The distance from New York to Habana is 1,227 miles by sea. The distance from Cumberland Sound or St. Marys is 527 miles, giving to Cumberland Sound an advantage of 700 miles, or an advantage of 1,400 miles on the round trip. The distance from New York to San Juan, P. R., is 1,399 miles, and from Cumberland Sound 1,121 miles, giving to Cumberland Sound an advantage over New York of 278 miles, or 556 miles on the round voyage. The distance from New York to Kingston, Jamaica, is 1,474 miles, and from Cumberland Sound 1,016 miles, giving to Cumberland Sound an advantage of 458 miles, or 916 miles on the round voyage. The distance from New York to Santiago, Cuba, is 1,362 miles, and from Cumberland Sound or St. Marys, 904 miles, giving Cumberland Sound an advantage over New York of 458 miles, or 916 miles on the round voyage.

It follows from the foregoing that in all American trade with the north coast of South America, with the Pacific coast of South America, and with the West Indies, Cumberland Sound has an advantage over New York of an average of 450 miles, or 900 miles on the round trip. This commerce embraces all South American trade, except the Atlantic side of South America, and West Indian trade, and in 1914 amounted to \$286,994,588, and yet the total imports from all the world coming into all South Atlantic ports only amounted in that year to \$17,256,585. For the year 1916 American commerce with the Pacific coast and north coast of South America, and with the West Indies, amounted to \$756,453,451, and from the Atlantic coast of South America to \$401,042,232, and yet the total imports from all the world to South Atlantic ports in 1916 amounted only to \$6,488,611.

These figures as to volume of traffic, location of countries dealt with, and relative distances demonstrate that there is a vast waste in ocean transportation. It would be conservative to estimate that at least one-fifth of this entire commerce with South America and the West Indies, which amounted in 1914 to \$502,423,714, ought at least to seek entry into America through the most conveniently located port. If one-fifth should seek the nearest Atlantic port it would give from this source alone, to a properly equipped South Atlantic port, a foreign commerce of over \$100,000,000. Ocean transportation has been, therefore, a source of economic waste, and will become a source of still greater economic waste under a universal advance in the cost of everything.

On the subject of this cost of ocean transportation there is fortunately an entirely trustworthy public record. The United States is owner of the Panama Railroad Steamship Co. On the subject of the cost of ocean transportation Emory R. Johnson, in *Panama Canal Traffic and Tolls*, page 178, said:

The expense incurred by the Panama Railroad Steamship Co. for maintaining the *Cristobal* in service for six round voyages between New York and Colon, made during 194 days of 1911, amounted to \$729.93 per day. This includes the following items: Superintendence, wages of crew, fuel, lubrication, stationery, subsistence, stores for department, other operations, and depreciations. Expenses incurred while the ship is at terminals are not included, but the ship is made to bear its proportionate share while at sea of the office superintendence expenses. The *Cristobal* is of 6,195 tons net register, 9,606 gross, American measurement. It is operated at an average speed at sea of 12 knots, with a per diem expense of 11.7 cents per net register ton per day.

"The steamship *Panama*, of the Panama Railroad Steamship Co.'s fleet, had a per diem expense of \$866.05 on an average during six round voyages made during 147 days of 1911. The items of expense are the same as those of the *Cristobal*, as listed in the preceding paragraph. This vessel is 4,193 tons net register and 5,666 gross register, American measurement. Its speed at sea averages 14½ knots, and the per diem expense equalled 20 cents per net register ton. This vessel, which is only two-thirds of the size of the *Cristobal*, carries twice as many passengers and is operated 2½ knots per hour faster than the *Cristobal*. For these reasons its daily expense per net register ton was 70 per cent greater."

The average speed of an ocean-going freighter is 10 knots per hour, and according to the distances herein given the time saved as between Cumberland Sound and the West Indies on the one hand and New York on the other, as well as with all commerce moving through the Panama Canal and to the north coast of South America, would amount to about two days in one direction, or four days on the round trip.

The argument in favor of the great economy in ocean shipping in the use of Cumberland Sound is overwhelming and unanswerable. Bear in mind that in the economies which will be involved in the use of Cumberland Sound and St. Marys the absence of any need for pilotage and for towage is one of very great importance.

It is not necessary now to take into account European trade. So far we have considered this situation only from its ocean side. Turning to the land side, Mr. Richard H. Edmonds, editor of the *Manufacturers' Record*, in a letter to Secretary McAdoo, published in the *Manufacturers' Record* of February 21, 1918, draws a vivid picture of a newly liberated South, a South liberated from the one-crop fallacy. Heretofore the South has been looked upon merely as a producer of cotton. The South to-day, in variety and volume, on a per capita and a per acre basis, is the greatest food-producing section of the world. In his letter to Secretary McAdoo, Mr. Edmonds, among other things, says:

"It will interest you, I am sure, if you have not made a study of the facts, to know that of the total increase in the corn production of the United States in 1917 over 1916, that more than one-half of 316,000,000 bushels was in the South, excluding Texas and Oklahoma. It will also interest you to know that against a decrease of 7,200,000 bushels in wheat production last year as compared with the previous year, in all other sections, the South made a gain of 21,700,000 bushels of wheat.

"The total value of all farm products, including crops and meats, in the South last year was in excess of \$7,000,000,000, and of this only about \$2,000,000,000 was represented by the cotton crop, including the seed, leaving \$5,000,000,000 as the value of foodstuffs and feedstuffs.

"It will interest you, I am sure, to know that many of the strictly cotton-growing States of the Central South very far lead in corn production many of the leading grain States of the West. Alabama, for instance, produced last year twice as much corn as Michigan; North Carolina produced 18,000,000 bushels more than Wisconsin; Georgia raised 30,000,000 bushels more than Wisconsin; Kentucky 32,000,000 bushels more than Minnesota and 25,000,000 bushels more than South Dakota.

"May I also call your attention to the fact that the South produces about 1,400,000,000 pounds of cotton seed oil, an essential food fat, and almost as much as the total butter produced in the United States. It also produces from 2,000,000 to 2,500,000 tons of oil cake and meal, the best feedstuffs known, which was formerly largely shipped to Europe and to the West, but the shipment of which now must be confined mainly to the West. It also produces more than 1,000,000 tons of cotton seed hulls, likewise an important feedstuff.

"In 1916 the South produced 36 per cent of the country's corn crop in addition to the total production of cotton and of cane sugar. It produced 92 per cent of the rice crop of the country, 92 per cent of the sweet-potato output, and 18 per cent of the white potatoes. Its apple crop was 30 per cent of the total apple yield of the United States, and its peach crop 49 per cent. It raises practically all of the peanuts. It had 39 per cent of the country's swine, 35 per cent of the total number of cattle, and 29 per cent of the milch cows of the country, and at the time of the last census it produced 33 per cent of the country's eggs and 45 per cent of the country's chickens and other fowls."

In an editorial in the *Manufacturers' Record* of April 14, 1918, the same subject is followed up, dealing more particularly with the South in the matter of animal husbandry. That editorial in part is as follows:

"On the farms of the South, January 1, 1918, there were 6,983,000 milch cows, an increase of 556,000, or 8.6 per cent, more than in 1915, while the rest of the country outside of the South had on farms an increase in 1918 over 1915 of 1,466,000 head, or 9 per cent.

"The estimated number of cattle other than milch cows on the farms of the South, January 1, 1918, is reported at 14,779,000, a gain of 1,245,000, or 9.2 per cent, over the number reported January 1, 1915.

"Georgia, this year, with a gain of 25 per cent cattle other than milk cows, shows a larger increase than any State in the country.

"The number of sheep estimated on the farms of the South January 1, this year, was 8,504,000, an increase of 206,000, or 2.5 per cent, compared with 1917. For the rest of the country there is reported a total of 40,396,000 sheep, an increase of 1,078,000, or 2.7 per cent compared with 1917.

"On January 1, 1918, there were 28,072,000 swine on the farms of the South, an increase of 2,341,000, or 9.1 per cent, compared with 1915. The rest of the country, outside of the South, on the first of the year had 43,302,000 swine, 4,415,000, or 10.1 per cent, increase compared with 1915.

"In a recent bulletin of the Southern Railway referring to these statistics on cattle and swine raising in the South, it was pointed out that each of the States of Georgia and Alabama has more hogs than all of the New England States, and New York, New Jersey, Delaware, and West Virginia combined, a good illustration of what the South is doing, for which it rarely gets credit."

It is manifest that a new life, a new energy, and a new wealth has come to the South. In little or no time, with her marvelous possibilities of soil and climate, the South will have for sale a vast volume of agricultural and animal food products, and will then need, as she has never needed, an open, easy, and inexpensive gateway to the sea.

In matter of distance by rail, St. Marys is nearer to Kansas City, Omaha, St. Louis, and Salt Lake City than is New York, and it is needless to add that as to all intervening territory, Cumberland Sound is much nearer.

Preparation for peace, preparation for a readjustment of trade currents and commercial relations, is the supreme duty of the hour, next, of course, to winning the war.

Not to go into unnecessary details, but looking only at the high places on the map, the Government is now making an investment at Muscle Shoals which will involve the expenditure of more than \$100,000,000 in the production of air nitrate, and Senator Underwood estimates that, on the basis of 1914 prices, this public investment will save to the farmers of the South annually \$78,000,000. The United States is also, on Cumberland River, near Nashville, Tenn., making an investment and developing the hydroelectric energy of that stream, which will involve perhaps another \$100,000,000, for the primary purpose of producing powder, and for the secondary purpose of utilizing after the war this great energy for industrial uses.

So far we have considered briefly the prospect of ocean tonnage which should come to Cumberland Sound, and land tonnage in the way of surplus southern crops which would come to Cumberland Sound, but there is a wider view of the subject. St. Marys River is navigable for a distance of 61 miles from the sea, for vessels drawing 15 feet. A canal across the north end of Florida, connecting the Atlantic with the Gulf, could only be constructed by utilizing the St. Marys River and the Suwannee River. The construction of such a canal is one that would interest not only the States in the immediate vicinity of Cumberland Sound, but would interest and concern the entire Mississippi Basin.

In his work, *The American Transportation Problem*, John Howe Peyton, prints a map showing the Mississippi Basin as containing 1,240,050 square miles. The project of a canal connecting the Atlantic and the Gulf would therefore be a matter of moment to more than one-third of the United States, and would be complementary to the Lakes to the Gulf project, for the carrying into effect of which the State of Illinois has already authorized the expenditure of \$20,000,000.

An insignificant sum expended in the development of proper terminal facilities at St. Marys and Point Peter, on Cumberland Sound, would mean the accelerated development of the South and the West in the matter of food production.

The St. Marys Canal is not a local problem at all, but a continental problem. Connecting as it will the waters of the Mississippi Basin, the Alabama Basin, and the Apalachicola River Basin with the warm waters of the South Atlantic, leaving the Gulf at St. Marks, it would develop a major world gateway at St. Marys and Cumberland Sound and a minor world gateway in vicinity of St. Marks, on the Gulf of Mexico. It would open up by the inexpensive system of barge transportation an easy outlet to the Atlantic for the foodstuffs of the great regions of the United States which now produce, and which must in larger measure produce, surplus food crops for the world in future.

AS A GATEWAY FOR FOOD.

The two great food-consuming points in the world are London and New York. London has an area of 443,000 acres and a population of seven and a quarter million. These people must have three meals per day and could not produce one ounce of food. The distance from New York to London is 3,381 miles, and the distance from New Orleans to London is 4,747 miles, while the distance from St. Marys to London is 3,880 miles, and the distance from New Orleans to New York is 1,738 miles, and from St. Marys to New York, 747 miles. The St. Marys canal would undoubtedly reduce the distance between New Orleans and London and between New Orleans and New York by at least 400 miles, and that by a route which, unlike northern outlets, is ever subject to being closed by cold weather.

The St. Marys Canal would be more important as an outlet for American food to the large cities of the Atlantic seaboard and to Europe than the Erie Canal, because the latter is open for transportation only from April to December, and although the Erie and other canals owned by the State of New York represent

a cost of \$170,000,000, the total tonnage passing over the Erie Canal in 1914 was 1,361,764 tons. The tremendous advance in the cost of rail transportation must of necessity stimulate to the highest degree a revival of interest in river and canal transportation.

Among canals already in existence which are practically abandoned and which must be revived in the food-producing area of the United States are the following:

Brazos River cost	\$255,000
Channel	450,000
Colbert Shoals	2,350,000
Galveston and Brazos	340,000
Illinois & Michigan	7,320,000
Lehigh Coal & Navigation Co.	4,455,000
Louisville & Portland	5,716,686
Miami & Erie	8,062,680
Muscle Shoals & Elk River Shoals	3,156,919
Ohio	4,695,204
Portage Lake and Lake Superior	1,725,000
Sabine-Neches	1,081,000
Sturgeon Bay and Lake Michigan	287,000

The Interstate Commerce Commission in 30 I. C. C., page 228, shows a tremendous decline in water transportation on the Mississippi River.

In the year 1880 there were 1,082 departures from St. Louis, and 1,056 arrivals of steamboats operating on the Mississippi between St. Louis and points south. In the year 1896 there were 1,131 departures and 1,193 arrivals. In the year 1909 there were 237 departures and 246 arrivals. A comparison between Mississippi commerce and commerce on the Elbe in Germany indicates the marvelous difference between the use of river and canal transportation in Germany and the use of river and canal transportation in America. In document 19, national waterways commission, which is a report by A. M. Thackara and other consular officers, and on page 71, we are told that the fleet of German inland waterways ships consisted of 26,234 vessels, aggregating a carrying capacity of 6,172,239 tons. All this river shipping is privately owned and is operated in competition with state-owned railroads. The largest number of ships and greatest tonnage were employed on the Elbe waters, namely, 13,776 ships of 2,416,970 tons; the Rhine holding the second rank, there plying 4,044 vessels, of 2,171,954 tons, on this river and adjacent waters. The further statement is made that Hamburg was the home port of 6,733 vessels plying on inland waterways.

More than one-half of the area of the United States produces a surplus of food crops and surplus of feedstuffs and would be directly benefited by the St. Marys Canal. First, in the shortening of the distance to a south Atlantic port, and for another reason: Corn transportation from Gulf ports is subject to deterioration in transit, owing to its becoming overheated in passing through the warm waters to the south of Florida. The result in some instances of this overheating is to make the corn sprout and to become otherwise unsuitable for food, and such shipments, of course, suffer greatly in price in European markets, and was several years ago known as Gulf corn. The saving in this respect alone to the corn-producing regions of the Mississippi Basin would pay the farmers of that vast region a sum far in excess of the interest on the sum that might be invested in the construction of the St. Marys Canal.

AS A WAR MEASURE.

It has long been the policy of the United States to construct an inland waterway along the Atlantic seaboard and along the Gulf coast, with a view to furnishing a protected route for American commerce and American warships in the event of a foreign war. Millions have been expended upon these two inland-waterway projects. Cumberland Sound would be the natural point where the Gulf and Atlantic inland waterways would meet the Atlantic coast line inland water route. Nature has already made the St. Marys River navigable for ships drawing 15 feet for a distance of 61 miles or more.

Construct the St. Marys Canal from the upper reach of the St. Marys River into and across the Okefenokee Swamp into and down the Suwannee River, and thence across a level plateau to the Gulf, and the United States would have a complete circle of inland waterways extending from New York to Cumberland Sound, from Cumberland Sound to the Gulf and on to New Orleans; from New Orleans up the Mississippi River and along the Lakes to the Gulf

Canal, to Chicago, thence up the Great Lakes, the Erie Canal, and the Hudson River back to New York.

Coal and iron are always essential in peace and in war. The ores of Alabama and the coal of Alabama, with the St. Mary's Canal open, could be easily and cheaply transported to the Atlantic at Cumberland Sound. Cumberland Sound is 400 miles nearer the Panama Canal than is Norfolk, and is 500 miles nearer Habana than is Norfolk. The opening of the St. Marys Canal would undoubtedly lead to the improvement of all rivers flowing into the Gulf of Mexico, and this would have a vivifying effect upon agriculture, manufacturing, and mineral developments along all these waterways. For example, the Apalachicola Basin furnishes water transportation at the present time as high up as Bainbridge, Ga., on the Flint River, and this could easily be extended to Albany. It also furnishes transportation on the Chattahoochee as high up as Columbus, and this could be extended as high up as Atlanta; coupled with the hydroelectric development north of West Point, that would add incalculably to the manufacturing power of the South.

The Alabama Basin includes, of course, all territory tributary to the Tombigbee, the Black Warrior, the Coosa, and the Etowah, extending as high up as Gadsden, Ala.; Rome and Cartersville, Ga. In case of war there could be quick assemblage of food, raw material, and other things by a protected route to Cumberland Sound, which is a protected harbor sheltered from the ocean by Amelia Island and by Cumberland Island. Any catastrophe which might happen to the Sault Ste. Marie or Soo Canal would greatly cripple all iron and steel industries east of Chicago, because they are dependent upon the ores which are gathered on Lake Superior, and which must be transported through this canal. The possibilities of such a contingency should commend the utilizing in every way possible of the ore and coal deposits of Alabama, so as to make them easily available in case of need.

The marvelous increase in the production of food and feedstuffs in the South is bound to reduce very greatly the southbound traffic of all rail lines using the Mississippi and Ohio River crossings, for this southbound traffic consists principally of food and feedstuffs. When this commerce is greatly reduced the railway lines leading into southeastern territory must look elsewhere for commerce to take the place of that which is lost. One fact illustrative of what is here said may be given in the report of the State veterinarian, Dr. Peter F. Bahnsen, for the current year. This report shows that for the year 1916 Georgia bought of dry salt meats 36,882,681 pounds and that for 1917 it bought 19,942,591 pounds. Or, in other words, in one year there was a decrease of 16,940,090 pounds.

It is manifest that the carriers in southeastern territory must go to the seashore and look to the trade of Cuba, Jamaica, and the West Indies and the Pacific coast of South America, to the trade of the north coast of South America, and to the trade of the Atlantic coast of South America as a means of finding new traffic to take the place of that which will be lost as the southeast produces its own food and feedstuffs. The carriers must also look to European trade for a new tonnage to be distributed from south Atlantic ports to the interior of the South, which can be done and should be done, and should have been done long ago.

For instance, Cumberland Sound is 580 miles farther from Liverpool than is New York, and counting 3 miles of ocean haul to one of land, it is 194 miles farther from Liverpool than New York. It may be stated that the distance from New York to Memphis is 1,237 miles, while from Cumberland Sound it is only 619 miles. From New York to New Orleans the distance is 1,047 miles, while from Cumberland Sound it is 588 miles. It would hardly be worth while to compare distances, but Atlanta is nearly 300 miles from Cumberland Sound, Chattanooga is 440 miles, and Birmingham 468 miles.

There are three great ports—New York, Hampton Roads, and New Orleans. There should be a fourth on the south Atlantic, and that should be at Cumberland Sound, because it is within 4 miles of the open sea, the harbor does not shoal nor freeze, there is no need of pilotage, there is no need of towage, and the Government owns already properties susceptible of vast and valuable improvement, which can be converted into deep-sea terminals and which will be of service to the entire southeast and to the entire Nation.

HUGH M. DORSEY,

Governor of Georgia and Chairman Georgia Council of Defense.

